FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Integrating Gender and Nutrition within Agricultural Extension Services

Zambia
Landscape Analysis

Farmers and extensionists in PROFIT+ demonstration soybean and maize fields© INGENAES taken by Katy Mosiman

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INGENAES
Integrating Gender and Nutrition within Agricultural Extension Services

Technical editing and production by Andrea Bohn

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cultural practice, LLC

Zambia
Landscape Analysis

Prepared by

Audrey Smith and Sarah Ward

University of Florida

and

Laina Schneider

University of California, Davis

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Abbreviations

ASSIST	Applying Science to Strengthen and Improve Systems
ASTI	Agricultural Science & Technology Indicators
BFS	Bureau for Food Security
BMI	Body Mass Index
CAADP	Comprehensive African Agricultural Development Program
CASH	Competitive Agricultural Systems for High Value Crops
CDC	Country Development Cooperation
CDCS	Country Development Cooperation Strategy
CEO	Camp Extension Officer
CIA	Central Intelligence Agency
CGIAR	Consultative Group for International Agricultural Research
CIMMYT	International Maize and Wheat Improvement Center
COMACO	Community Markets for Conservation
CRS	Catholic Relief Services
CSO	Central Statistics Office
DO	Development Objective
CDCS	Country Development Cooperation Strategy
DRC	Democratic Republic of the Congo
EAS	Extension and Advisory Services
FANPRAN	Food, Agriculture and Natural Resources Policy Analysis Network
FANTA	Food Security Country Framework
FAO	Food and Agriculture Organization of the United Nations
FFP	Food for Peace
FFPFS	Food for Peace Food Security
FNDP	Fifth National Development Plan
FNFC	Food and Nutrition Security Component
FO	Farmer's Organization
FRA	Food Reserve Agency
FSP	Fertiliser Support Programmes
FTF	Feed the Future
FSRP	Food Security Research Programme
FY	Fiscal year
GART	Golden Valley Agricultural Research Trust

GDP	Gross Domestic Product
GFP	Gender Focal Point
GHI	Global Health Initiative
GIDD	Gender in Development Division
GII	Gender Inequality Index
GRZ	Government of the Republic of Zambia
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
IAPRI	Indaba Agricultural Policy Research Institute
IFAD	International Fund for Agricultural Development
IRDI	Institute for Research and Development
IRPRI	International Food Policy and Research Institute
INGENAES	Integrating Gender and Nutrition within Agricultural Extension Services
LIFT	Livelihoods and Food Security Technical Assistance
MACO	Ministry of Agriculture and Cooperatives
MAL	Ministry of Agriculture and Livestock
MCDP	Most Critical 1000 Days Programme
MEAS	Modernizing Extension and Advisory Services
MFL	Ministry of Fisheries and Livestock
MoFNP	Ministry of Finance and National Planning
MOH	Ministry of Health
MoA	Ministry of Agriculture
MRI	Maize Research Institute
NAIP	National Agriculture Investment Plan
NAP	National Agricultural Policy (2004-2015)
NDP	National Development Plan
NEPAD	New Partnership for Africa's Development
NFNC	National Food and Nutrition Commission
NFNSP	National Food and Nutrition Strategic Plan
NGO	Non-Governmental Organization
NGP	National Gender Policy
NHSP	National Health Strategic Plan
OECD	Organization for Economic Co-operation and Development
PASS	Program for African Seed Systems
PROFIT+	Production, Finance and Improved Technologies

PRSP	Poverty Reduction Strategy Paper
PSD	Private Sector Development
RAIN	Realigning Agriculture to Improve Nutrition
RFP	Rural Finance Programme
SADC	Southern African Development Community
SBCC	Social and behavior change communication
SIDA	Swedish International Development Agency
SNDP	Sixth National Development Plan
SPRING	Strengthening Partnerships, Results, and Innovations in Nutrition Globally
SUN	Scaling Up Nutrition
UN	United Nations
UNDP	United Nations Development Project
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government
WB	World Bank
WFO	World Food Organization
WFP	World Food Programme
WHO	World Health Organization
Zambia	Republic of Zambia
ZARI	Zambia Agriculture Research Institute
ZDHS	Zambia Demographic and Health Survey
ZERS	Zambia Economic Resilience Program for Improved Food Security (Mawa Project)
ZIHP	Zambia Integrated Health Program
ZNFU	Zambia National Farmers' Union

Contents

Introduction

This analysis was prepared under the framework of the Integrating Gender and Nutrition within Agricultural Extension Services (INGENAES) project, which is funded through the Bureau for Food Security (BFS) of the United States Agency for International Development (USAID) to support the United States Government Global Feed the Future (FTF) Initiative. FTF strives to increase agricultural productivity and the incomes of both men and women in rural areas who rely on agriculture for their livelihoods. Landscape analyses like this one are available for almost all of the FTF countries and readily accessible at http://ingenaes.illinois.edu/library.

The purpose of these analyses is to provide a backdrop for the INGENAES project as it engages with stakeholders in each country to find ways of integrating gender and nutrition in extension. In each country the nature of the engagement varies slightly, depending on the needs and opportunities jointly identified by prospective partners and the INGENAES team as well as recommendations by USAID BFS and the USAID country missions. The landscape analyses are a snapshot in time that are intended to be updated periodically. They are intended to inform a broad range of stakeholders about the status of agriculture, agricultural extension, gender issues, and nutrition challenges, as well as major programs that are being implemented to improve food and nutrition security. It is hoped that having these reports publicly available will inform the debate on how to make progress and to more widely share information about what measures are already being undertaken.

This landscape study provides an overview of Zambian agriculture, including the structure and function of the agricultural extension system. It provides qualitative and quantitative information on poverty, nutrition and gender related issues. The report summarizes Zambia's current agricultural and nutrition policies and details the strategic development goals of USAID and other donors. Finally, the report provides a summary of the ongoing projects related to agriculture extension, gender and nutrition.

Background

The Republic of Zambia is a landlocked country in Southern Africa, bordered by the Democratic Republic of the Congo (DRC), Botswana, Zimbabwe, Tanzania, Malawi, Namibia, Angola, and Mozambique. The country is divided into eleven administrative provinces, with the Eastern Province being the regional focus of Feed the Future activities (FTF, 2011).

Figure 1: Map of Zambia

The country has a total area of 752,614 sq. km (CIA, 2015) and a tropical climate. There is a rainy season occurring between December to April, when the

rainfall is heaviest and temperatures remain at around twenty degrees Celsius (Our Africa, 2015). The cool dry season from May to August is characterized by lower temperatures and rainfall, while the hot dry season from September to November consists of days with temperatures of thirty degrees Celsius and low rainfall. Tropical temperatures, sufficient rainfall and topography characterized by valleys, floodplains and plateaus, all make Zambia well suited to agricultural production. Agricultural land accounts for 31% of total land with 27% used as permanent pasture (CIA, 2015).

INGENAES supports the development of improved extension and advisory systems (EAS) to reduce gender gaps in agricultural extension services, increase empowerment of women farmers, and improve gender and nutrition integration within extension services by directly or indirectly assisting multiple types of stakeholders within a country, such as farmers, producer groups, cooperatives, policy makers, technical specialists, development non-governmental organization (NGO) practitioners, and donors.

INGENAES will strengthen institutions by identifying their needs and strengthening their capacity to effectively integrate gender and nutrition sensitive information and activities into agricultural extension systems with the aim to promote gender equality, improved household nutrition, and increased women incomes and, subsequently, household food security. Based on the identification of four main gaps in extension services in terms of gender and nutrition integration, INGENAES activities can be divided into the following action areas:

- Build more robust, gender-responsive, and nutrition-sensitive institutions, projects, and programs capable of assessing and responding to the needs of both men and women farmers through extension advisory services (EAS);
- Identify and scale proven mechanisms for delivering improved EAS to women farmers;
- Disseminate technologies that improve women's agricultural productivity and increase household nutrition; and,
- Apply effective, nutrition sensitive, extension approaches and tools for engaging both men and women.

Indicative activities of the INGENAES project include: learning exchanges, assessments, curricula development, training into action, mentoring relationships, internship experiences, and networks that focus on identifying gender-responsive and nutrition-sensitive innovations that can be promoted by EAS organizations, and adopted by men and women farmers. Developing these outputs collaboratively with agricultural extension experts and other partners will transform extension-relevant institutions working directly with men and women farmers.

Over fifteen million people live in Zambia, many concentrated in Lusaka, the capital and largest city (CIA, 2015). The population is diverse, with eighteen major ethnic groups, many of which are Bantu speaking. Total, there are more than seventy ethnic groups with distinct languages across the country. High fertility rates (5.72 children per woman) have driven rapid population growth over the past 30 years, reaching nearly 3 percent annually between 2000 and 2010. (CIA, 2015). For Lusaka, the population growth rate was nearly twice the national rate during the same period. The population is very young, with a median age of 16.7 years, with nearly half of the population younger than 14 years of age.

The British South African Company first colonized Zambia, then known as Northern Rhodesia, in the 1890s due to the presence of high value copper and mineral reserves throughout the region (Zambia

Tourism, 2015). In 1923, power was absorbed by the U.K, until 1964 when the country gained independence, and the name changed to Zambia. Since then, the country has experienced relative political stability and has made great strides in economic growth. With a gross domestic product (GDP) growth rate averaging approximately 6.7% annually for the last ten years, Zambia has one of the fastest growing economies in the world. Expansion and privatization of the copper mining industry as well as foreign investment in retail, construction, and the manufacturing sectors have catalyzed this growth. The Government of Zambia (GRZ) requires all exported copper to undergo value-added manufacturing rather than solely being exported as ore (UN Economic Commissions for Africa, 2013). Copper mining remains the country's largest industry, accounting for over 80% of foreign exchange (World Bank (WB), 2014). Cobalt, zinc, lead, gold, silver, uranium, gemstones and coal are also mined. Manufacturing includes food products, beverages, and textiles. Zambia has huge potential for tourism as home to numerous national parks as well as the Victoria Falls, the world's largest waterfall and one of the Seven Wonders of the World (CIA, 2015).

Zambia has a labor force of approximately six million people, 85% of which work in the agricultural sector (CIA, 2015). With an unemployment rate as high as 50%, agriculture is often the only source of livelihood or income within the informal sector (Aregheore, 2013). Yet despite its importance in terms of employment, the agricultural sector contributes relatively little to Zambia's overall GDP, comprising only 10.8% in 2015 while industry contributed almost 33% (CIA, 2015). While overall GDP growth has been significant, simultaneous declines in agriculture's contribution to GDP has resulted in a widening income gap between urban wage earners and the rural poor (Tembo and Sitko, 2013). Approximately 40% percent of the population resides in a few urban zones strung along major transportation corridors, and about 60% of the population remains in rural areas, constrained by poor infrastructure, limited market access and insufficient employment opportunities (CIA, 2015). Over two-thirds of the population subsists on less than $1.25 USD per day (World Bank (WB), 2015). Despite strong economic growth and status as a lower middle-income country, rural poverty still remains a significant issue, with 58% percent of rural dwellers living in extreme poverty (African Economic Outlook, 2015).

Poor health outcomes are both an indicator and an outcome of rural poverty. Zambia has a high burden of disease, characterized by high prevalence and impact of communicable disease, particularly malaria, HIV and AIDS, STIs, and TB, and high maternal, neonatal and child morbidities and mortalities (Ministry of Health (MOH), 2011). Only 47% of births are "attended by a skilled health professional" and 21% of mothers are likely to die from pregnancy-related causes (WHO, 2015). Additionally, the infant mortality rate is 70 per 1,000, (CIA, 2015) and 45% of children under the age of five are identified as stunted (height-for-age growth is at or below two standard deviations of the WHO median growth standard due to chronic malnourishment) (WHO, 2015). Children under five years in Zambia constitute 20% of the total population, and deaths in this age group account for about 29% of all deaths each year, with malnutrition playing a contributing role to over 50% of child disease burden. HIV is one of the causes for short life expectancy for adults in Zambia with a prevalence rate of 12.9% (CIA, 2015). Anemia is also a significant health concern for both children and mothers, with a prevalence rate of 53% and 30% respectively (WFP, 2015). The risk of infectious diseases is also very high, the most commonly contracted being malaria, dengue, typhoid and diarrhea. Furthermore, rapid population growth and urbanization contribute to increased stress on Zambia's food, health care, sanitation, and education systems. This stress exacerbates

existing levels of food insecurity, malnutrition, and poverty, particularly for the poorest and most vulnerable segments of the population (Sitko et al., 2011).

However, child mortality rates and have declined substantially since the early 1990s due to improved immunization coverage, exclusive breastfeeding, vitamin and mineral supplementation, and malaria prevention and treatment (Ministry of Health (MOH), 2011). According to the 2014 Zambia Demographic and Health Survey (ZDHS), the Under-Five Mortality Rate (U5MR) has reduced drastically. In the past 5 years the U5MR is 75 deaths per 1,000 live births, as compared with 168 per 1000 live births in 2002. The Infant Mortality rate (IMR) is 45 deaths per 1,000 live births, nearly half the rate from 2002 (96 deaths per 1000 live births). The Maternal Mortality Ratio (MMR) reduced from 729 deaths per 100,000 live births in 2002, to 398 in the years preceding the 2014 ZDHS. Additionally, HIV prevalence in adults aged 15 to 49 years reduced from 16.1% to 13% during the same period. Malaria incidence per 1000 population dropped from 412 in 2006, to 246 in 2009; TB treatment success rate improved from 79% in 2005 to 86% in 2008 (MOH, 2011).

Although Zambia is confronted with its share of challenges, the country is endowed with land and water resources that remain untapped and constitute great agricultural potential. Currently, only 15% of total arable land is cultivated and a similar share of irrigable lands is actually irrigated (Bongalia, 2008). The potential of the agricultural sector/the country's capacity for agricultural production has become the key priority in the GRZ's growth and poverty reduction program; yet the country's infrastructure, extension services and agricultural research and development remain poorly developed, especially in remote rural areas (Bonaglia, 2008).

Agriculture

Despite the fact that agriculture remains the primary livelihood source for the majority of Zambians, the growth of the agricultural sector has been relatively slow (Tembo and Sitko, 2013). This is particularly alarming because poverty affects about two-thirds of rural households, and agricultural production remains a fundamental determinant of poverty for these households (Bonaglia, 2008). The Zambian government's agricultural policies primarily focus on maize production, including subsidies which may constrain production of other crops (Tembo and Sitko, 2013). Agricultural development has also been constrained by environmental and climatic conditions, such as land degradation and vulnerability to droughts and flooding. The country is well positioned, however, to become a regional food exporter given its nine neighbors and strong linkages between smallholder households and private firms in vertically-integrated out-grower programs for cotton, tobacco, sugar and soy. Currently, large commercial operations export sugar, tobacco, wheat, coffee, soy and some horticultural crops, though the value of exports has trended downward in recent years. This may be due in part to a 2016 ban on maize exports in response to a maize surplus the previous season (Chapoto & Chisanga, 2016). This is a marked change from 2013, when the country had only been meeting national cereal consumption requirements from own production one out of every three years (Mulenga, 2013).

The majority of Zambia's farmers engage in small-scale subsistence farming which is dominated by the production of maize (Ministry of Agriculture and Livestock (MAL), 2014). Smallholders comprise about 85% of the agricultural labor force, and typically cultivate between 0.5 ha and 5 ha of land. Only 2% of farmers operate large-scale farms 20 ha or more (FAO, 2009). Crops grown on arable land other than

maize include sorghum, rice, peanuts, cassava, tobacco, and cotton. Pasture is used to raise cattle, pigs, goats, and poultry. While individuals whose primary income generating activity is agriculture typically focus on staple crops, a survey in Lusaka found that 85% of households had some type of garden, most commonly producing vegetables for home consumption (Mulenga, 2013). A reliance on rain-fed agriculture, drought, disease, limited agricultural input and technology use, and natural disasters continually put farmers at risk for insufficient production to meet household demand for food (WFP, 2009).

Weak links between farmers, extension workers and researchers, and limited access to inputs among Zambian smallholders has also contributed to poor performance of the agriculture sector (Tembo and Sitko, 2013). Although use of inputs has been on an upward trend since 2001, only about 55% of Zambian farmers use fertilizer, the majority of which is applied to maize fields (Tempo and Sitko 2013). Given the typically low rate of return for most farmers, the use of fertilizer has proven uneconomical (Tembo and Sitko 2013). Since 2002, the government has subsidized the cost of fertilizers and other inputs. The provision of these subsidies (called FISP) increased both the number of farmers utilizing fertilizers and overall consumption. In 2016, MoA began piloting an e-voucher program for subsidy dispersal (Chapoto & Chisanga, 2016).

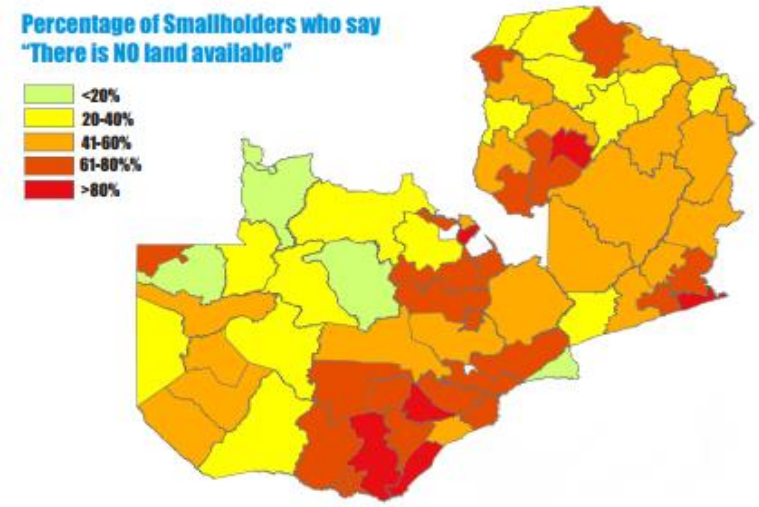

Figure 2: Percentage of smallholders claiming land is unavailable by district (IAPRI, 2015)

Rural, smallholder farmers are also constrained by land holding size and access to procurement of additional land. The GRZ Central Statistical Office (CSO) estimates that 72.7% of all small-scale farm households cultivate less than two hectares of crops (National Agriculture Investment Plan (NAIP), 2013). The existing land tenure system contributes to smallholders' restricted land use and land acquisition opportunities, as over 90% is customary land held by a chief who dictates which households have control over that land (NAIP, 2013). The NAIP (2014-2018) reports that approximately 56% of small-scale farmers believe that there is no land available in their village that has not already allocated to someone (NAIP, 2013). The lack of available land leads to land fragmentation and decreasing farm sizes because farmers sub-divide their land for future generations (NAIP, 2013). Because farmers' capacity to effectively commercialize production is closely correlated with land holding size, their production capabilities and livelihoods are severely restricted as a result of inadequate and decreasing farm size. Consistently low productivity and lack of crop diversification contribute to the cycle of poverty, undernutrition and poor health in Zambia (NAIS, 2013). As depicted in Figure 3, for most major food crops in Zambia, yields remain well below global averages (NAIS, 2013). Even in years of national food surplus many subsistence farmers and other households often struggle to obtain enough food to feed their families (World Food Programme (WFP, 2009).

Underdeveloped infrastructure and lack of access to markets additionally hinder agricultural profitability and disproportionately affect smallholder farmers. Poor rail and highway infrastructure, a ban on maize exports, and inadequate support for food safety and quality control impede smallholders' entry into export market or progress to commercial farming (Successful African Firms and Institutional Change Project, 2015). These barriers restrict smallholders' livelihood capabilities by diminishing the possibility of profiting from potential agricultural surpluses, and production of surplus yields in the first place.

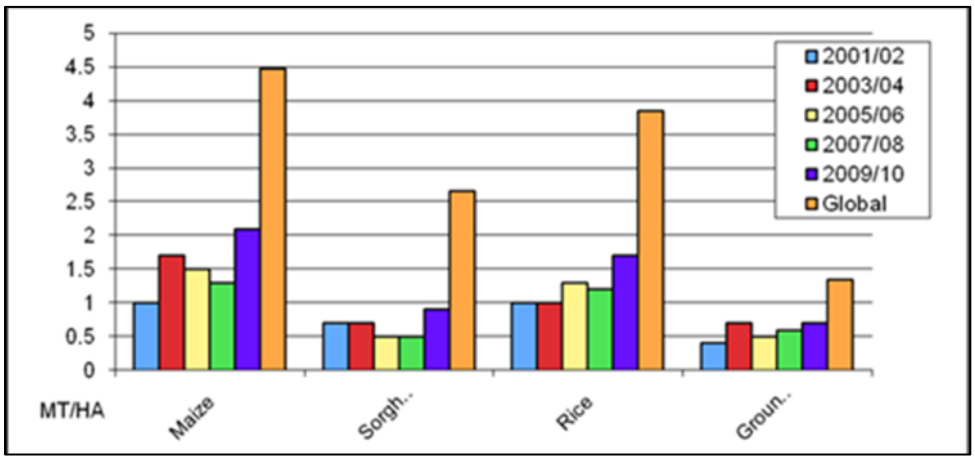

Figure 3: Average yields of key commodities compared to global average. Source: CFS

Women in Agriculture

Women account for approximately 70% of Zambia's agricultural labor (WB, 2004) and are often responsible for domestic food production and household nutrition (WB, 2004). However, women farmers in Zambia often do not own or control most productive resources, are disproportionately excluded from decision-making processes, and are less likely to benefit from public services, such as extension services (Sitko et al., 2011). They are disadvantaged by poor access to information, communications, infrastructure and markets, and reduced access to training and education. Limited access to and control of resources and services frequently results in lower crop yields for women, and women's income-generating abilities are also constrained by their primary task of meeting household needs (Sitko et al., 2011). Compared to men, women have greater workloads and time constraints in both productive and domestic activities and less access than men to the resources and opportunities they need to be fully productive in agriculture. The barriers that women farmers face inhibit the food security, nutrition and well-being of their families, and of future generations. However, according to the World Bank (2004): "if women enjoyed the same overall degree of capital investment in agricultural inputs, including land, [agricultural] output in Zambia could increase up to 15%" (Sitko et al., 2011).

Food Insecurity and Nutrition

Despite Zambia's agricultural potential and recent progress, significant food insecurity persists in the country. Zambia's hunger situation is classified as 'alarming' by the International Food Policy Research Institute's (IFPRI) Global Hunger Index (GHI). This index combines four indicators: undernourishment, child wasting, child stunting and child mortality. The GHI scores are ranked out of 100, with scores 35-49.9 representing alarming severity. In 2016, Zambia scored 39, however GHI indicators varied drastically across provinces (von Grebmer et al., 2016). In 2010, 42% of Zambian households were classed as "extremely poor" in that they were unable to afford a 'minimum food basket". And around 53% of households could not afford three meals a day, with the figure increasing to 59% in rural areas. The worst affected provinces are in the north and west of the country. There is also very limited ability of poor households to absorb negative shocks. On average, Zambians spend around 50% of their total household budget on food.

In addition to hunger, malnutrition is a major concern. Malnutrition leads to underdevelopment and increased susceptibility to illness, disease and death in children. Women, children and infants are the most nutritionally vulnerable population groups. According to a report by UNICEF (2009), "thousands of children and women suffer from one or more forms of malnutrition, including low birth weight, wasting, stunting, underweight, and multiple micronutrient deficiencies such as vitamin A, iron, zinc, and iodine deficiencies." The rates of micronutrient deficiencies are also high, with an estimated 54% of preschool children and 14% of pregnant women deficient in vitamin A. Half of all preschool-aged children and pregnant women are anemic (WHO, 2015).

The causes of the nutritional situation in Zambia are multiple. Food shortages have occurred as a result of recurrent droughts, pervasive poverty, poor infrastructure and limited investments in agriculture insufficient attention paid to smallholder agriculture, policies that favor urban businesses over farmers, and policies that distort prices and interfere with markets. The heavy dependence on maize as the predominant food crop, which accounts for about 65% of land cropped annually and 90% of all cereals and 60% of most Zambians' caloric intake, has led to barriers in physical availability of and economic access to adequate nutrition (FAO, 2015).

Stunting has been persistently high at over 40% since the early 1990s. The absolute number has increased to 1.14 million in 2013. Rates only dropped by 6 percentage points from 46% to 40% from 1992 to 2013. Micronutrient malnutrition is also high in Zambia: 15% of children under five are zinc deficient, 20% are vitamin A deficient, and 87% are deficient in vitamin B12 (Save the Children 2015). Although stunting rates among children under five decreased in the past decade, food insecurity and undernutrition remain critical issues. High morbidity, limited access to health services, poverty and food insecurity are the major determinants of undernutrition in children. Malnutrition leads to underdevelopment and increased susceptibility to illness, disease and death in children. Women who are pregnant and lactating are especially vulnerable to nutritional stress, as are their infants and unborn children (UNICEF, 2009).

Regionally, the highest rates of children who are stunted and underweight are found in the Eastern and Northern provinces, where poverty is widespread and population density is higher than in other more sparsely populated and rural provinces (Sitko et al., 2011). The Southern and Northwestern provinces have the highest rates of wasting among children under five. While wasting is typically brought on by short-term shocks such as an acute absence of food or disease, stunting and underweight are usually the result of issues of chronic food access and nutrition deficits. Therefore, populations in the Northern and Eastern Provinces more often experience chronic food and nutrition insecurity, contributing to high levels of

stunted and underweight children, whereas more people in the Southern and Northwestern Provinces experience short-term and acute food and nutrition problems, leading to higher numbers of wasted children (Sitko et al., 2014).

A wide variety of underlying factors contribute to maternal and child nutrition, including poor-performing health systems and ineffective economic and social policies, low agricultural productivity, low levels of maternal education and women's social status, and poverty and other dimensions of inequity (UNICEF, 2009). In addition, a lack of resources or knowledge among caretakers can lead to poor infant and young child feeding practices, and illnesses such as diarrhea, intestinal parasites, malaria and HIV and AIDS can also exacerbate nutritional deficits (UNICEF, 2009). Stunting is inversely related to household wealth and increasing levels of mothers' education, and is therefore considered a proxy indicator for national development (Sitko et al., 2011). Statistics derived from the Zambia Demographic Health Surveys (ZDHS) (2014, p. 162) indicate that stunting is more likely to occur in children born to mothers with no education (44.6 %) than children born to mothers with a secondary education (38.6 %).

In Zambia, maternal health is crucial in determining child health and survival. Perinatal problems, including low birth weight of infants, are often directly linked to a mother's health and nutritional status. A healthy and well-nourished woman is much more likely to give birth to a healthy infant and avoid a host of perinatal problems that accompany low a birth weight baby (WHO, 2000). Short birth intervals and infections during pregnancy also play an important part in determining the health and survival of children (WHO, 2000).

Farming productivity plays a crucial role in preventing malnutrition for the majority of the rural poor, who are disproportionately women, because they depend on agriculture for their livelihoods (FTF, 2011). Although they grow 60 to 80% of food crops, women farmers face a multitude of challenges in producing and obtaining adequate food for themselves and their children (UNICEF, 2009).

Gender gap: Women's status

The socio-economic status of women in Zambia remains low, despite thirty years of gender initiatives (Eckman, 2007). Women's representation in political parties, public institutions, and civil society organizations has not been sufficient to ensure that they benefit fully from national and community development and Zambian women are still not fully represented in decision-making at household, village, and national levels (Eckman, 2007). This can be attributed to social and cultural disadvantages faced by women, which are compounded by gender-based disparities (i.e., property rights, limited access and control over productive resources, polygamy, education, health and agriculture (Eckman, 2007). In Zambia, women hold just 11.5% of parliamentary seats, and only 25.7% of adult women have reached a secondary level or higher compared to 44.2% of their male counterparts (United Nations Development Project (UNDP), 2013). The Gender Inequality Index (GII), which reflects gender-based inequalities in three dimensions, reproductive health, empowerment, and economic activity, was 0.623 in 2012, ranking Zambia 136 out of 148 countries (UNDP, 2013). The GII shows the loss in potential human development due to inequality between female and male achievements. It ranges from 0, where women and men fare equally, to 1, where one gender fares as poorly as possible in all measured dimensions.

RESOURCES	ACCESS		CONTROL	
	Women	**Men**	**Women**	**Men**
Land	Low	High	Low	High
Labour	Low	High	Low	High
Machinery	Low	High	Low	High
Oxen (animal draft power)	Medium	High	Low	High
Tools	Medium	High	Medium	High
Time	Low	High	Low	High
Inputs (seed, fertilizer, etc.)		High	Low	High
Education and information	Low	High	Low	High
Technical skills			Low	High
Management skills	Low	High	Low	High
Credit/loans	Low	High	Low	High
Finances	Low	High	None	High
TOTALS:				
High	**0**	**11**	**0**	**12**
Medium	**0**	**1**	**1**	**0**
Low	**8**	**0**	**10**	**0**
None	**0**	**0**	**1**	**0**

H = high (68 – 99%); M = Medium (34 – 67%); L = low (1 – 33%); N = none (0%).

Gender can be considered a serious economic issue for the country due to the different roles that men and women occupy in both household and market economies in Zambia (WB, 2004). Although 74% of women are involved in the labor market, the African Economic Outlook (2015) reports that only 23% of these women feel that they are able to contribute to economic decisions for their household (African Economic Outlook, 2015). This lack of decision-making ability perpetuates the idea that men should be in charge of the household and enables the continuation of gendered poverty and inequality. In female-headed households where women may by default have decision-making power, they are also more likely to be poorer: 60% of impoverished households in Zambia are headed by women (FTF, 2011).

	GII value	GII Rank	Maternal mortality ratio	Adolescent fertility rate	Female seats in parliament (%)	Population with at least secondary education (%)		Labour force participation rate (%)	
						Female	Male	Female	Male
Zambia	0.623	136	440	138.5	11.5	25.7	44.2	73.2	85.6
Malawi	0.573	124	460	105.6	22.3	10.4	20.4	84.8	81.3
Sub-Saharan Africa	0.577	—	475	105.2	20.9	23.7	35.1	64.7	76.2
Low HDI	0.578	—	405	86	19.2	18	32	56.4	79.9

Table 2: Zambia's GII for 2012 relative to selected countries and groups. Source: UNDP, 2013.

Socio-cultural biases play a powerful role in determining women's agency and access to agricultural extension services and other programs (FTF, 2011). Although women are responsible for food for household consumption, they tend to have less access than men to essential inputs, including land, credit, fertilizers, new technologies and extension services, and have little impact in the decision-making structure of the agricultural sector (FTF, 2011). According to the World Bank (2004), gender analysis of the roles of women and men in Zambian agriculture and natural resources shows that women significantly lag behind men in terms of access to and control over resources (WB, 2004). As a result of these factors, women's

agricultural yields tend to be significantly lower than men's, which in turn contributes to their lower socio-economic status and results in adverse consequences for their own health and that of their children.

In terms of land tenure, Zambia has two systems: state contract (i.e., statutory) and customary, the latter of which constitutes the majority of the land (Vision 2030, 2006). Customary land tenure favors men and their traditional inheritance of land, and women are often discriminated against when attempting to lease state contracted lands. Customary law also can take precedent over statutory laws that forbid gender discrimination, which is seen in regard to land and marriage (Vision 2030, 2006). Married couples do not own property jointly or inherit property from each other under Zambian customary law, and household property is considered to be property solely of the husband. This custom facilitates the practice of property grabbing from women when their husband has died, and is further compounded in polygamous marriages, which are common in the country, as well as in HIV-AIDS affected households. Gender-based violence is an ongoing issue in Zambia and may be perpetuated by the traditional practice of bride price (Vision 2030, 2006). Nutrition is also gendered: due to socio-cultural norms women typically eat after men, consume fewer nutrient-rich foods, and have less household decision-making abilities due to socio-cultural norms.

Female headship on smallholder farms in Zambia:

- Out of the 1.6 million smallholder farm households in Zambia, 23.5% are female headed.
- 59% of these female household heads are widowed. The incidence of widowed households appears to be related to HIV prevalence.
- 19% of female-headed smallholder farm households are divorced.
- Women in polygamous marriages account for 6.7% of female household heads.
- Women household heads who have not been married account for 2.9%.

Source: Zambia FTF Gender Assessment 2011, page 25.

Gender mainstreaming clauses exist in Zambia's national policies but have rarely been implemented successfully on a large scale. Zambia created a Gender in Development Division (GIDD) in 1996 in the Cabinet Office within the Office of the President (WB, 2004). The issue of gender equality was elevated in 2012 with the formation of the Ministry of Gender with the authority to facilitate coordination, monitoring and evaluation of gender mainstreaming in all sectors of Zambian government, policy and programs. MoG's goal statement is "To mainstream gender at all levels in order to reduce gender disparities" (www.mgcd.gov.zm/). The National Gender Policy (NGP), accepted in 2002, recognizes the importance of both men and women in achieving sustainable economic growth and poverty reduction and aims to reduce gender bias and divisions in the economy and labor. However, some ministries have not adopted this policy and many Zambians are even unaware of the NGP (Vision 2030, 2006). The National Agricultural Policy (NAP) as well as the Fifth and Sixth National Development Plans (NDP) place emphasis on gender as an important sectoral focus but the effects of this have not been realized thus far (Vision 2030, 2006). The GRZ also appointed Gender Focal Points (GFPs) in each line ministry and at provincial level. The GRZ assigned a GFP within the Ministry of Agriculture and Cooperatives (MACO), but gender equity in agricultural extension has also not yet been achieved. Women remain highly underrepresented in the MACO, and the quota for female extension officers has not been reached (Vision 2030, 2006).

Eastern Province

FTF efforts are focused in the Eastern Province, where the population is largely made up of smallholder farmers, and poverty and food insecurity are widespread (FTF, 2011). The area is home to 1.6 million people and is characterized by higher population density than most of the country, with 30.9 persons per square kilometer. The Eastern Province accounts for 15% of all the small (<1 ha) farms in the country (FTF, 2011). Child stunting is particularly severe in this region: 64% of children under the age of five exhibit signs of stunting, which is considerably higher than the national average (Sitko et al., 2014).

The Eastern Province's high population density has contributed to a social and economic crisis with the majority of the population deprived of a decent standard of living, and high mortality rates due to hunger, sickness, and disease (FTF, 2011). In 2011, approximately 65.4% of people living in the Eastern Province were considered extremely poor, falling well above the national average of 50.6% (Sitko et al., 2011).

Province	Poverty Status					
	Extremely poor		Moderately Poor		Non Poor	
	% Population	# of People	% Population	# of People	% Population	# of People
Central	58.9%	719094	12.8%	156792	28.3%	345781
Copperbelt	27.1%	483008	14.8%	263523	58.1%	1035566
Eastern	**65.4%**	**1049142**	**13.6%**	**217868**	**21.0%**	**337247**
Luapula	60.4%	561750	12.4%	114910	27.2%	252650
Lusaka	16.5%	269925	12.5%	204745	71.0%	1164904
Northern	64.0%	948741	14.5%	214866	21.5%	319309
North-western	56.7%	399954	15.4%	108684	27.9%	196355
Southern	57.8%	837195	15.7%	227490	26.6%	384989
Western	73.3%	646779	10.3%	90936	16.4%	144259
Total	50.6%	5915588	13.7%	1599814	35.7%	4181060

Table 3: Incidence and number of people living in poverty by province. Source: Sitko et al, 2011.

As shown in the figure below, FTF's Multi-Year Strategy (2011) shows that the Eastern province falls in the highest category nationwide for extreme poverty, children under five underweight, and children under five stunted.

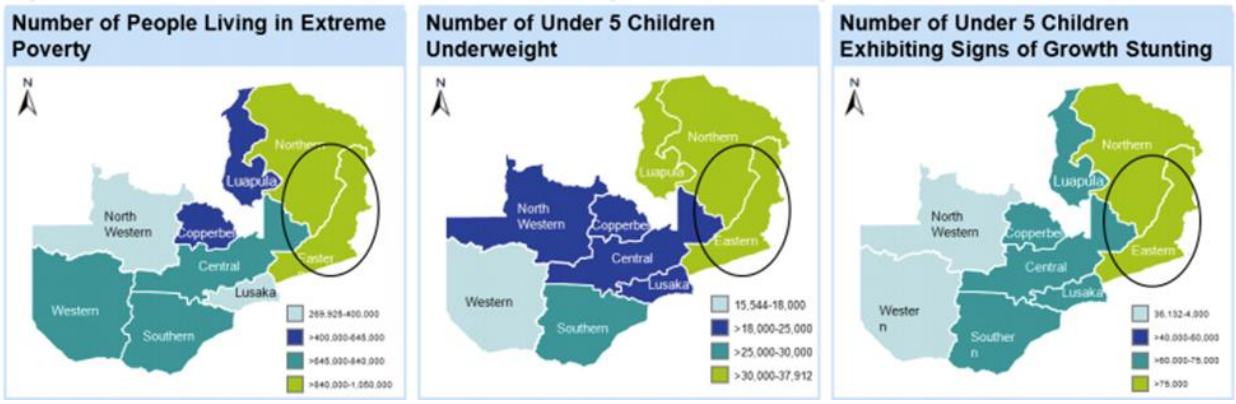

Figure 4: Snapshot of provincial level of poverty, underweight and stunting. Source: FTF, 2011.

As in other rural areas of Zambia, combating poverty, hunger and undernutrition in the Eastern Province relies on improved access to inputs, services and information for both men and women smallholder farmers so that they can increase their production and diversify their diets and livelihoods. However, without improvement in women's decision-making capabilities, equitable access to and control of land and other resources, improved agriculture may not necessarily translate into improved nutritional or socio-economic status for many farmer and their children.

In the Eastern Province, maize yields remain below one ton per hectare for approximately half of the smallholder population, which is lower than Zambia's average maize yields (FTF, 2011). According to FTF (2011), the province has the greatest potential for agricultural growth as it currently has diversified crop production, existing value chains, and a connection to markets by way of the Lusaka-Lilongwe-Nacala transport corridor. The Eastern Province already plays a significant role in total national production for many crops, including 73% of the total sunflower production, 30% of all groundnuts, 69% of all cotton, and 22% of all maize. However, crop yields tend to be at or below national averages, and small-holder farmers frequently experience low yields and food insecurity (Sitko, 2011).

Households in the Eastern Province that are comprised of only adult females and their dependents have a higher incidence of poverty than those with other household compositions. Households of only female adults cultivated less land than other households across all crops, and produce on average lower yield of all crops (Tembo and Sitko 2013). In addition, women in the FTF zone have less decision-making autonomy over field use in difference typed of fields in male/female households (Tembo and Sitko, 2013).

Agricultural Policy and AES Institutional Framework

Agricultural Policy

Zambia's development strategy is based on its Vision 2030 and the 6th National Development Plan (NDP) (Revised in 2013) when the governing party changed. The role of the agricultural sector in Vision 2030 is to increase productivity and release labor to industry and eventually to services. The revised 6th NDP has multiple agriculture-related strategies, one of which is Extension Services, Research and Development Decentralization. The NAP, revised in 2013 following revisions to the 6th NDP, has 12 main objectives, one of which is to "Strengthen agricultural extension service delivery as the driver to move agriculture toward a competitive and diversified agriculture sector." The NAP has ten strategies to accomplish this objective (see Annex 1).

Zambia Agriculture-related Policy and Strategy Documents

- Vision 2030
- 6th National Development Plan
- National Agriculture Policy
- National Agriculture Investment Plan
- National Agriculture Transformation Programme
- National Agricultural Extension Strategy

The Zambia National Agriculture Investment Plan (NAIP, 2014-2018) was formulated in 2013 as part of the CAADP processes. The NAIP has four technical programs and one management program. Agricultural extension is addressed under the management program, namely, Key Support Services (KSS), which is split into Knowledge Support Systems and Institutional Development.

Agricultural Institutions

The Ministry of Agriculture and Livestock (MAL) was re-organized in early January, 2016, and split into two separate ministries: The Ministry of Agriculture (MOA) and Ministry of Fisheries & Livestock (MFL). The extent and entirety of the new structure was not publicly available at the time this document was created. However, Agricultural Extension Services (EAS) falls under the MOA and yet is still tasked with disseminating livestock & fisheries extension information. The Ministry of Agriculture (MOA) is responsible for coordinating all agricultural activities, including providing agriculture extension services in order to promote adoption of improved farming technology (Tucker et al., 2014). The department includes three operational branches: 1) the Technical Service Branch (TSB); 2) the Agricultural Advisory Service Branch (AASB); and 3) the Crops Production Branch (CPS). Additionally, there are eleven Agricultural Training Institutions (ATIs) overseen by the MOA, some of which provide in-service training to agriculture extension staff and other personnel in the horticulture sector (Tucker et al., 2014).

Governmental Extension Systems

MoA is the public extension provider in the country, and its program is designed to promote the Ministry's overall mission and vision, which is outlined in the National Agriculture Investment Plan (NAIS): *"to facilitate and support a viable and competitive agriculture sector that assures food security and incomes at both household and national levels and maximizes the sector's contribution to Gross Domestic Product (GDP)."* The vision for the agriculture sector is to have *"An efficient, dynamic, competitive, sustainable and export-led agriculture sector that assures food security and increased income by 2030"* (MAL, 2013 in Tucker et al., 2014).

Nation-wide coverage of public extension in Zambia is well established, as there is a long history of disseminating agricultural knowledge and information to smallholder farmers throughout the country (Tucker et al., 2014). Following early colonial systems, and a Training and Visit (T&V) model in the 1970-1990s, farming systems and participatory models have become more common in the Zambia public extension system. The most recent approach is titled Participatory Extension Approach (PEA). The Ministry of Agriculture has articulated this approach as:

> "The PEA is a defined methodology and systematic learning process focusing on cumulative joint learning using both indigenous and modern knowledge systems. Participatory Extension Approach focuses on the full involvement and participation of entire communities or farmer groups in the development process…The emphasis is on facilitation rather than teaching of the communities so that communities understand the real source of their challenges" (NAESS Draft).

There are multiple geographic levels of the public extension system: Provincial, District, Block/Camp and Zone. MOA implements the nationwide extension program through this structure, the most important for farmers being a large team of field-based Camp Extension Officers (CEOs), whose job purpose is "*to undertake the provision of extension services in order to facilitate dissemination of information and technologies for improved agriculture at camp level*" (MAL, 2013 in Tucker, et al., 2014). The CEOs' role includes the following functions and "principle accountabilities," shown in Table 4 below. The levels of the extension service are described briefly below.

Provincial Level Extension Structures

At provincial level agriculture extension is headed by the Provincial Agricultural Coordinator (PACO) who is supported by Provincial Subject Matter Specialists. The PACO is administratively answerable to the Provincial Permanent Secretary and technically to the Permanent Secretary for the Province.

District Level Extension Structures

At the district level, agriculture extension is headed by the District Agricultural Coordinator (DACO). A team of District Subject Matter Specialists, which include nutritionists and veterinary scientists, among others, support the DACO in ensuring delivery of extension services. The DACO is administratively answerable to the District Commissioner and technically to the PACO.

Agriculture Block and Camp

Each District is sub-divided into Agricultural Blocks which are in turn demarcated into Agricultural Camps based on prevailing geography, social boundaries and farmer population. There are between four and seven camps per block.

Zone

An Agricultural Camp is further sub-divided into Agricultural Zones which are the main interface between public extension service delivery and target beneficiaries. Farmer Study Groups are formed within zones based on primarily on commodities. A Zone Agricultural Committee (ZAC) is formed with representatives from the farmer groups, associations and cooperatives. Membership in the ZAC may include other stakeholders in the Zone such as community based organizations (CBOs), Faith Based Organizations (FBOs), NGOs, individuals and others that are operating in the Zone.

A Camp Agricultural Committee (CAC) is formed at Camp Level and is responsible for coordinating all agricultural activities in the Camp. It draws membership from the farmer groups represented in each Zone as well as from key stakeholders such as NGOs and other government institutions (e.g. Schools and Health Centers).

Key Result Area	Principal Accountabilities
Training	Conducts timely demonstrations and training of farmers in order to ensure effective delivery of appropriate information on technology.
Technical Support	Conducts timely demonstrations and agronomic practices for the farmers in order to ensure effective delivery of appropriate technologies.
Performance Management	Ensures timely development of individual and camp work plans in order to monitor and evaluate performance.

Table 4: Camp Extension Officers' key functions and principal accountabilities. Source: Tucker et al., 2014.

One of the major challenges of agricultural extension in Zambia is underfunding for the system. At any one point, up to one-third of the positions at local levels remain unfilled. Both funding and skills are a challenge. There is limited up to date information on projected and current numbers of extension agents, but MoA personnel indicate that there are roughly 1700 public extension agents in Zambia. Human resources as of 2011 are shown in Table 5.

Major Categories of Extension Staff	Secondary School diploma		2-3 yr. Ag diploma		B.Sc. degree		M.Sc./Ing. Agr. degree		Ph.D. degree	
Gender	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**
Senior Management Staff	3	114	3	10	25	114	7	24	1	6
Subject Matter Specialists (SMS)			11	53						
Field Level Extension Staff	45	278								
Information, Communications & Technology (ICT) Support Staff	3	5	1	2	3	5	2	4		1
In-Service Training Staff										
Total Extension Staff: 742	**73**	**397**	**15**	**65**	**28**	**119**	**9**	**28**	**1**	**7**

Table 5: Human Resources in the Public Extension Service in Zambia (Governmental or Ministry-based Extension Organization. (GFRAS, 2011)

Public Extension Staffing

MoA is responsible for providing extension services throughout Zambia, using staff from the national level down to the field level. The University of Zambia's School of Agricultural Sciences and the ATIs, including the Natural Resource and Development College (NRDC) trains personnel to work as general agricultural practitioners. NRDC, part of the Ministry of Agriculture and one of the ATIs, is a three-year program underwritten by the University of Zambia. NRDC offers courses in the following sub-areas:

- Agribusiness Management (ABM)
- Animal Science (ASM)
- Crop Science (CSM)
- Agricultural Education and Extension (ED)
- Agricultural Engineering (AE)
- Fisheries (FS)
  Food and Nutrition (FN)
- Horticulture (HM), and
- Water Engineering

In 2011, there were 742 public extension staff members at the national level, managed by a team of 308 senior staff according to the Modernizing Extension Advisory Services (MEAS) report (2014). There were 64 subject matter specialists, 323 field-level extension staff and 26 ICT staff, with 1 extension worker to approximately 1000 farmers (MEAS, 2014).

According to the MEAS report (2014), at least one Extension Officer is assigned to each of 346 Agricultural Blocks and the 1,757 Agricultural Camps within the Blocks. Under the Sixth National Development Plan (SNDP), the GRZ had planned to significantly increase the number of extension officers in 2015 to 4,965 agricultural and 2,611 livestock extension officers (Tucker et al., 2014). (Tucker et al., 2014). However, at the time of the MEAS report (2014), the system was struggling with a high vacancy rate (nationally, only 76% of extension officer positions were filled). In addition to vacancies, extension officers move around frequently and there is high turnover in most posts.

	Province	Total Number of Camps in the Province	Total Number of Blocks in the District	Small Scale Farmer Population[1]
1	Central	164	38	247,642
2	Copperbelt	156	44	143,335
3	Eastern	236	33	498,152
4	Luapula	202	44	110,328
5	Lusaka	98	20	123,708
6	Muchinga	135	24	169,703
7	Northern	149	34	259,914
8	Northwestern	220	42	134,100
9	Southern	220	43	283,268
10	Western	230	47	132,687

Table 6: Human Resources in the Public Extension Service in Zambia (Governmental or Ministry-based Extension Organization. (GFRAS)

[1] Small scale farmer is defined as one who cultivates less than five (5) hectares of land

	National	**1,810**	**369**	**2,102,837**

According the FTF 2014 MEAS report, women held prominent leadership roles in a number of the non-governmental agricultural and rural development programs, but are under-represented in middle and upper management roles at District and Provincial MoA in Eastern Province, and there are indications that women may be also be underrepresented at the national level (Tucker et al., 2014).

The number of women serving as CEOs varies significantly from District to District, with higher percentages of female officers in less remote districts. For example, in the Chipata District, approximately 40% of CEOs are women. However, it was reported that in that same district, only 10 of 68 MoA civil servants are women. Additionally, a MoA manager from another district reported that the percentage of women serving above the camp level was even lower. In MoA's efforts to increase the number of CEOs over the coming couple of years, there is the opportunity and challenge to begin addressing this gender imbalance (Tucker et al., 2014).

Farmer Field Schools (FFS) are currently one of the most prevalent approaches and methodologies for providing extension service (Tucker et al., 2014). They vary from camp to camp in regards to quality of facilitation, frequency, and impact, but they are cited as the "endorsed approach to extension in Zambia," for MoA as well as for many NGO and project-based service providers (Tucker et al., 2014). FFS incorporate group-based learning, including on-farm demonstrations organized by lead farmers. Camp-level extension staff help facilitate bringing together local farmers into commodity study groups or interest groups for sharing, demonstrations, farm cross-visits, presentations by MoA or by outside advisors and agribusiness representatives, and experiential learning (Tucker et al., 2014). In addition, extension officers regularly meet with these groups and sometimes visit households to follow-up on specific farmer problems. Once the lead farmers are identified, demonstration plots are established at their farms and the FFSs are organized around these plots (Tucker et al., 2014).

Farmer Training Centres (FTCs) and Farm Institutes (FIs)

In order to transfer agricultural innovation to farmers, and provide in-service training to Agricultural Extension Officers, the Government constructed Farmer Training Centres (FTCs) in a number of agriculturally strategic districts and each of the country's ten provinces have a Farm Institute (FI). There are currently ten Farm Institutes and 42 Farmer Training Centres throughout the country. The FTCs are meant to provide practical trainings for farmers in improved farm management practices and commodity demonstrations.

National Agricultural Information Services

The National Agricultural Information Services (NAIS) is a specialized information department of the MoA, whose main function is to support the extension services of the ministry through the dissemination of agricultural technical information through mass media, particularly targeting rural communities (Makundo et al., 2014). The mission of the NAIS is to promote the adoption of proven agricultural technologies and provide information services to small scale farmers in order to enhance their productivity, and also to obtain feedback from end-users. Information is gathered from researchers, extension and other stakeholders, packaged and disseminated to farmers using radio, television, publications and other print media. A major objective is to support Zambia's national development agenda by supporting rural development and agricultural development (NAIS, 2013). Currently, the most visible communication technology promoted by MoA at the local level is radio. Radio Farm Forum (RFF) is intended to enrich farmer group learning at Camp level. MoA District Information Officers work with Camp Officers to prepare the RFF shows (MEAS, 2014).

The Pluralistic Agricultural Extension System: non-public system

There are several other organizations that provide agricultural extension to large and small-scale farmers in Zambia. Private sector companies provide extension on specific commodities such as cotton and tobacco. The private seed companies are also active in promoting information on seed use.

There are several farmers' organizations and cooperatives which are also active in providing extension services to their member farmers. The Zambia National Farmers Union (ZNFU) is the biggest farmers' organization with its full-time staff providing various forms of extension services. ZNFU has initiated an electronic extension service through mobile phones. Although ZNFU has reached out to small-scale farmers, forming groups for better service provision, the organization focuses more on large-scale farming members who provide greater funding opportunities. Other farmer associations include the Zambia Cooperative Federation and the Small Scale Farmers' Association.

There are a number of Non-Governmental Organizations (NGOs) active in delivering agriculture extension services in Zambia. International and local NGOs implement projects funded by various international and bilateral Development Partners. These organizations often employ their own full-time extension officers, but interact with public extension staff for follow up and sustainability. One of the complaints of NGOs is that the relationships with the public extension system is inconsistent and can transplant, subsidize, and sometimes erode the public system. Some NGOs supplement extension staff through fees or fuel, creating expectations other NGOs and the public sector are not able to meet. There has not been an analysis of the impact of the non-public sector on publicly provided services.

The public extension service has received some support from external sources. The RESCAP project and the European PEP project have both supported capacity building of the system. However, external funding must be accompanied by a commitment by GRZ to employ sufficient extension officers and equip them with the resources they need to conduct their work.

Zambia Health System and Institutions

Zambia has focused on decentralization of its health sector, which is liberalized and "embraces diversity in ownership" (MOH, 2011). The Ministry of Health (MOH) is responsible for the overall coordination and management of the public health sector, which includes the following: health facilities and programs under the MOH, and some government line ministries and departments; faith-based health sector, under the coordination of the Churches Health Association of Zambia (CHAZ); the private sector, including for- and not-for profit health services, owned by private investors and Civil Society Organizations (CSOs); and traditional and alternative health service providers, which however operate informally and are not regulated or monitored MOH (MOH, 2011). Planning, management and resources are handled at the district level where services are provided. Zambia's National Health Strategic Plan (NHSP) (2011-2015) calls for "broader participation of all the key stakeholders, particularly the communities, in the governance of the health sector" (MOH, 2011). Sector coordination structures have been established at national, provincial, district and community levels, as follows:

- National Level: The MOH Headquarters in Lusaka is responsible for overall coordination and management of the health sector.
- Provincial Level: Provincial Health Offices (PHOs) are responsible for coordinating health service delivery in their respective provinces.
- District Level: District Health Offices (DHOs) are responsible for coordinating health service delivery at district level.

- Community Level: At community level, Neighborhood Health Committees (NHCs) have been established, to facilitate linkages between the communities and the health system (MOH, 2011).

The National Health Strategic Plan (NHSP) 2011-2015

The National Health Strategic Plan (NHSP) 2011-2015 is the fifth in the series of plans implemented under health sector reforms by the GRZ (MOH, 2011). The plan is implemented through the existing health sector institutional and coordinating framework, and the MOH is responsible for the overall coordination of its implementation and attainment of the objectives. Several other partners are also involved in implementation of the plan, including: other line ministries and government departments; Churches Health association of Zambia (CHAZ); private sector; traditional and alternative medicines sector; civil society/communities; the Cooperating Partner (CPs) (MOH, 2011). The plan is linked to multi-sector strategic frameworks that are relevant to health, including the National Food and Nutrition Policy (NFNP) (MOH, 2011).

Core Health Facilities

There are five categories comprising Zambia's core health service delivery facilities: Health Posts (HPs) and Health Centers (HCs) at community level; Level 1 hospitals at district level; Level 2 general hospitals at provincial level; and Level 3 tertiary hospitals at national level. The referral system also follows the same hierarchy. Table 7 shows a summary of the existing core health facilities in Zambia by level and type of ownership (MOH, 2011).

Description	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	North-Western	Southern	Western	Zambia
A) By Level of Care										
Level 3 Hospitals	0	3	0	0	3	0	0	0	0	6
Level 2 Hospitals	2	9	2	1	0	2	2	2	1	21
Level 1 Hospitals	6	8	8	5	15	6	10	14	12	84
Urban Health Centres	32	137	8	1	182	14	18	34	10	436
Rural Health Centres	113	53	156	125	47	145	120	174	127	1, 060
Health Posts	35	25	53	10	32	49	17	30	24	275
Total	188	235	227	142	279	216	167	254	174	1, 882
B) By Type of Ownership										
Public Health Facilities	164	164	211	132	116	189	137	217	159	1, 489
Mission Health Facilities	10	10	16	7	8	14	22	24	11	122
Private Health Facilities	14	61	0	3	155	13	8	13	4	271
Total	188	235	227	142	279	216	167	254	174	1, 882

Table 7: Core health facilities in Zambia by type, size and ownership, 2010. Source: Health Institutions in Zambia (MOH, 2010).

Health Training Institutions (TIs)

There are several training institutions for health professionals in Zambia which train health workers in various health disciplines. Training facilities include the University of Zambia School of Medicine (UNZA-

Med.), under the Ministry of Education (MOE); Evelyn Hone College, under the Ministry of Technical Education and Vocational Training (MTEVT); the Chainama Hills College of Health Sciences (CHCHS), and various nursing and midwifery schools, bio-medical training schools and other paramedical training institutions, at different levels, under MOH; mission health training schools, under CHAZ; and emergent private health\ training institutions at different levels (MOH, 2011).

Access to Health Services

Several factors affect access to health services in Zambia, including geographic location, poor transport and poor communication infrastructure, especially for rural areas (MOH, 2011). It is estimated that compared to 99% of urban households, only 50% of rural household are within five kilometers of a health facility. Other barriers include deficits and inequitable distribution of health infrastructure and workers; availability of medical supplies; and inequities of household incomes (MOH, 2011).

Gender and Health

Zambia has declared its commitment to "gender mainstreaming across the sectors and at all levels of socio-economic life" (MOH, 2011). The MOH developed the National Gender Policy (NGP), and implementation plan (MOH, 2011). Despite this symbolic achievement at the national level, the MOH recognizes that there are still major gender disparities in health outcomes, particularly in terms of morbidity, mortality, and nutrition (ZDHS, 2014). Additionally, the inclusion and participation of men in reproductive and family health remains low. Successfully integrating gender mainstreaming at all levels continues to be a challenge for the MOH and health sector (MOH, 2011).

Integrated Management of Acute Malnutrition

In an effort to address the country's malnutrition problem, the Integrated Management of Acute Malnutrition (IMAM) program was created. According to the MOH, in-service training for health care workers is provided by hospitals in each province. As a part of this training, health care workers learn about the management of acute malnutrition. Even so, the case fatality rate remains high in these hospitals at 20% - 40% (MOH, 2011). In response to this, community therapeutic care is being promoted as an alternative to hospital care, for cases deemed "uncomplicated severe malnutrition" and to facilitate early identification of malnutrition. The MOH reports (2011) that the IMAM program faces challenges that include poor reporting by health facilities coupled with nonexistence of IMAM indicators, shortages of medical supplies, equipment and staff, and high rates of HIV infection.

Key Sector Partners

The MOH seeks to "strengthen inter-sector collaboration and coordination mechanisms at all levels," by working with the following key partners: Government Line Ministries and Departments; Faith-based Health Sector/CHAZ group; Private Sector; Civil Society; Communities; Cooperating Partners (CPs); and Traditional and Alternative Health Services (THOPAZ) (MOH, 2011).

Zambia National Strategies and Policies on Nutrition

National Food and Nutrition Policy Context

Nutrition has fallen largely under the Ministry of Health, and is coordinated by the National Food and Nutrition Commission (NFNC). The Ministry of Health has one chief nutritionist focusing on nutrition as a subset of health issues. Until 2011, nutrition was considered as a part of the national health plan.

Nutrition Objective and Strategy under Health Service Delivery section of the NHSP:

The NHSP states its nutrition objective as to "significantly improve the nutritional status of the population and ensure food safety, particularly for children, adolescents and mothers in child bearing age, so as to prevent diseases" MOH, 2011).

Key Strategies:

- Strengthen nutrition service delivery in HIV/AIDS and TB programs and activities.
- Strengthen implementation of infant and young child feeding program.
- Promote maternal nutrition in pregnancy and during lactation.
- Provide support to micronutrient deficiency prevention and control (supplementation).
- Provide quality dietary, including food aid management services and information to in- and out patients.
- Strengthen use of Growth Monitoring and Promotion to improve nutrition interventions.
- Capacity building in Nutrition Advocacy and technical support and supervision.
- Scale-up public awareness and education on the importance of nutrition.
- Strengthen national and multi-sector coordination of nutrition programs.

The National Food and Nutrition Commission (NFNC)

Operating under the MOH, the National Food and Nutrition Commission (NFNC) generated the National Food and Nutrition Strategic Plan (NFNSP) for Zambia (2011-2015), which covers eleven key strategic directions related to improving food and nutrition in the country (NFNC, 2012). The plan gives priority to new multi-sector, "synergistic efforts to strengthen and expand interventions related to and nutrition" and to promote the First 1000 Most Critical Days Program (1st MCDP), the objective of which is to prevent stunting in children less than two years of age (NFNC, 2012). The NFNSP acknowledges that significant contributions from agriculture, health, education and community development and social services, water and sanitation and emergency response programs are crucial in addressing undernutrition in the country (NFNC, 2011).

Scaling Up Nutrition (SUN) movement

The NFNC manages the Zambian arm of the Scaling Up Nutrition (SUN) movement. After joining in December 2010, the NFNC launched the 1st MCDP (See Table 8), (NFNC, 2011). The basis is the 2010 SUN Framework, which promotes: (1) increasing the coverage of 13 evidence-based direct nutrition interventions; (2) integrating nutrition goals into broader efforts in health, agriculture, education, employment, social protection, and development; and (3) expanding the pool of resources for this effort. The target group is pregnant and lactating women and children under the age of two years, in what is known as the "1,000-day window of opportunity" (NFNC, 2011).

Priority Nutrition Intervention of the MCDP	Intervention	Beneficiary Category
A. Improved Nutrition During Pregnancy		
- Iron and Folic Acid Supplementation - Multiple Micronutrients	Micronutrients Iron and Folic acid supplement	Pregnant Mothers
B. Improved Nutrition during the first 6 months of infancy		
- Promotion of Breastfeeding - Growth monitoring and promotion - Expanding integrated management of acute malnutrition	Promotion of breast feeding and proper nutrition	Lactating Mothers and infants aged 0-6 months
C. Improved nutrition in early childhood (reduced levels of micro nutrient deficiency among lactating mothers and children 6-23 months)		
- Micronutrient powders - Zinc provision during diarrhoea - Vitamin A supplementation - Promotion of complementary feeding - Deworming	Micronutrients (Vitamin A, Zinc and Micronutrient Powder) Deworming	Children aged 6-23 months
D. Increased access to affordable, nutritious food, clean water, sanitation and social protection		
- Promotion of diverse diets for pregnant and lactating mothers - Promotion of safe water, hygiene and sanitation - Increased local availability of diverse foods - Nutrition-sensitive messages in cash transfer and other programs	Household level: Water, hygiene and sanitation Cash transfers	Households with pregnant or lactating mothers

Table 8: Priority nutrition interventions of the 1000 Most Critical Days Programme (MCDP). (SUN, 2011).

SUN has emphasized ten key recommendations for improving nutrition in Zambia, including (#9): Provide financial or tax incentives to engage the private sector, such as exempting or zero rating nutritious foods that are traditionally purchased by poor individuals, especially women. The program aims to "scale up proven nutrition interventions" to reduce childhood stunting by promoting the priority nutrition interventions (NFNC, 2011).

Zambia's Feed the Future Multi-Year Strategy

Zambia has a FTF strategy that outlines the USG's approach for ending food insecurity and hunger within the country primarily focusing on the Eastern Province (Zambia FY 2011-2015 Multi-Year Strategy (FTF, 2011). Zambia falls within FTF's East Africa region, which includes Burundi, Djibouti, DRC, Ethiopia, Kenya, Rwanda, Malawi, Sudan, Tanzania, Uganda, and Zambia (FTFa, 2011). The regional strategy's main goal is to "increase access, availability and utilization of African-grown staple foods in regionally integrated markets on the Northern and Central Corridors" (FTFa, 2011).

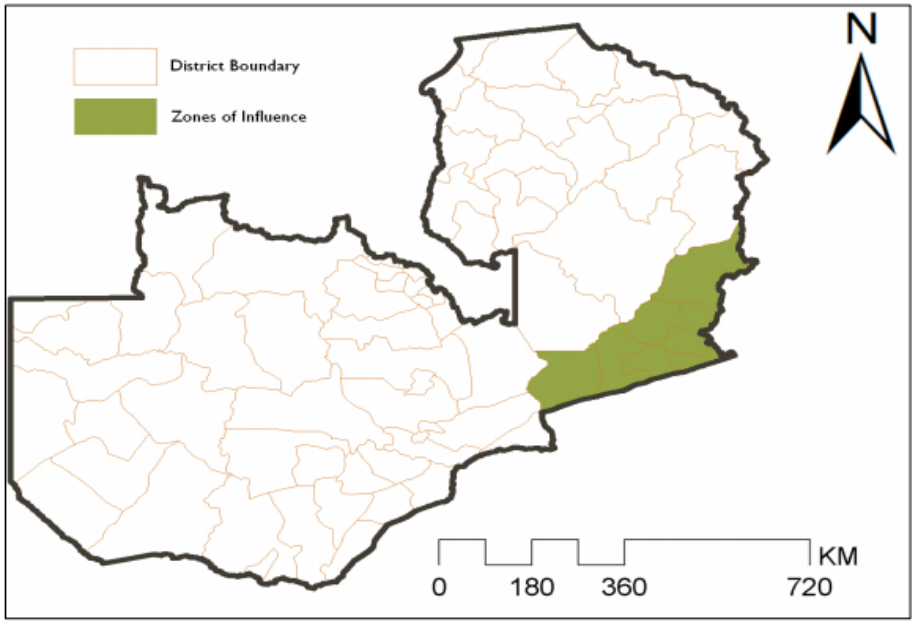

Figure 5 Feed the Future Zambia zone of influence.

USAID-Zambia's FTF food security and rural poverty alleviation programs are concentrated in five districts of the Eastern Province (Tucker et al., 2014). The major objectives of the programs are to address productivity issues, promote the development of smallholder-oriented value chains, improve nutrition, and support Zambian Agricultural Research Institute (ZARI) work in Eastern Province (Tucker et al., 2014). The strategy aims to provide targeted assistance to "an estimated 263,000 vulnerable Zambian women, children, and family members" in order to help them escape rural poverty, hunger, and food insecurity (FTFb, 2011).

The FTF Results Framework for Zambia (see Annex 1) gives the following hypothesis: "The diversification of staple crop production and consumption will increase food security and rural incomes, and contribute to a reduction in undernutrition in children under-five" (FTF, 2011).

Development Objective (DO) 2 of the FTF strategy is to reduce rural poverty in targeted areas. This will be measured by an increase in smallholder agricultural productivity, expansion of markets and trade, improvement in natural resource management, and improvement in resilience of vulnerable households. DO 3 aims for the improvement of human capital and is measured by an improvement in health service delivery, health systems and accountability, and community health practices.

The three core investment areas of the FTF strategy are diversification of production and income through upgrading value chains, enabling environment and policy development, economic resilience, and nutrition (FTF, 2011). The priority value chains for Zambia include maize, legumes such as groundnuts, and vegetables. The Zambian FTF strategy also emphasizes the importance of improving the livelihoods of women farmers as well as providing women with opportunities to participate in the economic aspects of priority value chains (FTF, 2011).

FTF works with many partner organizations in Zambia, and seeks to improve communication and coordination among the various organizations working in the province (Tucker, 2014). USAID-Zambia helped convene meetings among partners and stakeholders, aimed at "improving coordination and

harmonization" (Tucker, 2014). According to the Modernizing Extension and Advisory Services (MEAS) Rapid Assessment Report by Tucker et al. (2014), the meetings helped to elucidate a number of issues, including: 1) conflicts over NGOs' and donor-supported projects' use of incentives for engaging MAL staff, 2) differences in extension approaches, and 3) different and sometimes competing messages to farmers (Tucker, et al., 2014).

USAID/Zambia Country Development Cooperation Strategy (CDCS)

USAID's Country Development Cooperation Strategy for Zambia is in line with Zambia's own development objectives, while "emphasizing inclusivity" by designating attention to rural development challenges (USAID, 2011). Zambia's long-term development strategy is articulated in its "Vision 2030: A prosperous middle-income nation by 2030" (USAID, 2011). The GRZ has implemented a series of national development plans in order to reach the Vision 2030 objective, including the current Sixth National Development Plan (SNDP), encompassing 2011-2015. The plan has three overarching objectives: infrastructure development, rural development, and human development (USAID, 2011).

Zambia's development strategy regards human capital and rural poverty constraint as multi-dimensional and multi-sectoral, and embraces an "integrated, multi-sectoral development approach" (USAID, 2011). The CDCS's approach is to coordinate with other partners and the GRZ, and the strategy is integrated integrates closely with USAID initiatives, including include Feed the Future (FTF), the Global Health Initiative (GHI), and the Global Climate Change Initiative (GCC). USAID works with Zambia to achieve the CDCS goal through the following Development Objectives (DOs):

- DO1: Enabling governance environment improved;
- DO2: Rural poverty reduced in targeted areas; and,
- DO3: Human capital improved.

Food for Peace Food Security Country Framework

The Food and Nutrition Technical Assistance (FANTA) agency works with USAID to develop Food Security Country Frameworks (FSCFs) to provide programming guidance to current and potential food security partners on Title II-funded development food aid programs. These frameworks describe the food security situation of a country by identifying who and where the foods insecure are, why they are food insecure, and what actions are necessary to reduce their food insecurity ("FANTA III Food and Nutrition Technical Assistance," n.d. para 1). FANTA provides technical assistance to a number of focus countries to improve their food security and nutrition policies, strategies, and programs with funding from USAID ("FANTA III Food and Nutrition Technical Assistance: Zambia," n.d. para 1).

As of November 2015, a Food for Peace Food Security Country Framework for the country of Zambia had not yet been developed. However, in 2013, USAID/Zambia developed a strategic plan to support district-led integration of nutrition assessment, counseling, and support (NACS) into health care services in Kitwe District. Partners in this initiative include FANTA, the Thrive Project, PCI, LIFT, and ASSIST (www.fantaproject.org). ***(van Haeften et al., 2013).

Projects by USAID, Other USG Agencies & International Donors

ADSP- The Agricultural Development Support Project

ADSP is an agricultural development project financed by the World Bank's International Development Association (IDA) through a Sector Investment Grant (Bongalia, 2009). The project is primarily implemented through the Ministry of Agriculture and Livestock. The development objective is to promote increased commercialization of smallholder agriculture through improved productivity (Bongalia, 2009), and improve their access to markets and the competitiveness of their agricultural commodities. The project focuses on high potential agricultural areas and adopts a value chain approach (Bongalia, 2009).

ASSIST- Applying Science to Strengthen and Improve Systems

The ASSIST project in Zambia is a five-year project of the Office of Health Systems of the USAID Global Health Bureau to improve health care in USAID-assisted countries, strengthen their health systems, and advance the frontier of improvement science (Tucker et al., 2014). The project builds on the work of the USAID Health Care Improvement Project (HCI) and addresses the following services and service delivery issues (Tucker et al., 2014).

- Care and support for vulnerable children and families;
- Community-based care and linkages with facility services;
- Gender issues in health care delivery;
- Health workforce performance;
- HIV prevention, care, and treatment;
- Maternal, newborn, and child health;
- Non-communicable diseases and chronic conditions care;
- Nutrition assessment, counseling, and support;
- Reproductive health and family planning; and
- Tuberculosis, malaria, and other infectious diseases.

CASH- Commercial Agribusiness for Sustainable Horticulture Program

CASH is a four-year program that was launched in February 2012 with the goal to supplement small-scale farmers' income by expanding horticulture market share (Tucker et al., 2014). CASH operates through partnerships with producers, private sector businesses, and development organizations to address the challenges of food insecurity, rural poverty, and nutrition (Tucker et al., 2014). The program works with smallholder producers and processors in an effort to provide access to production support services, (e.g., seeds, fertilizer, pest control, financial services, pre- and post-harvest quality control) and market support services (e.g., buyers, market specifications, communications strategy, data collection and dissemination, and results monitoring). The project is working with farmers in Chipata, Petauke, Lundazi and Katete Districts of Eastern Province, and in peri-urban areas around Lusaka (Tucker et al., 2014).

COMACO- Community Markets for Conservation

COMACO works in Zambia in a variety of capacities including supporting "holistic" models of conservation, farmer-household and community level natural resources management and social services such as family health and family planning (Tucker et al., 2014). Improved agricultural techniques are learned by farmers through COMACO's Farm Schools, the Better Life Book, a handbook detailing recommended agricultural practices), and Farm Talk radio program. Farmers have benefitted with increased incomes and reduced food security; COMACO members have seen crop yields rise an average of 40% and food security decrease by 10-20%. In addition, promoting the role of women in agriculture is one of COMACO's central goals (Lewis, 2011). COMACO has established a working relationship with District Agricultural and Cooperative Officers in Zambia which has helped the GRZ cut costs while increasing overall agricultural productivity at the district level (Tucker et al., 2014). The collaboration between COMACO and District

Agricultural and Cooperative Officers has supported efforts to reach the more remote areas where COMACO operates, but human resources are reportedly a major constraint. COMACO recommends/seeks continued collaboration and a improved synergy to allocate the Department of Agriculture extension staff to work under the COMACO regional extension coordinators.

Concern Worldwide

Concern Worldwide in Zambia supports the conservation agricultural system that aims to impact on food security and agronomic issues, female agricultural power, dietary diversity and nutritional promotion (Concern Worldwide, 2015). Concern's Realigning Agriculture to Improve Nutrition (RAIN) project utilizes a model that combines agriculture with nutrition, health and gender programs. The aim of this program is to improve nutrition in the critical time between pregnancy and two years of age. RAIN trains Community Health Volunteers to provide nutrition support to mothers in their villages. The project also provides gender training to communities, traditional leaders, women's groups and their husbands, and fosters awareness in communities in relation to gender issues to create an environment that respects women when they are pregnant, breastfeeding and caring for their children. A unique component of the RAIN project is to 'coordinate and align' Zambian agriculture and health sector activities at the district and community level. RAIN is funded by Irish Aid and also supported by the Kerry Group, Bank of Ireland and IFPRI (Concern Worldwide, 2015).

Catholic Relief Services (CRS)

(CRS) has been operating in Zambia since 2000, and has programs in eight Zambian Provinces that advocate health, nutrition, agriculture, microfinance and capacity building (CRS, 2014). CRS seeks to empower rural communities by promoting techniques for processing, preparation and preservation of produce and works with farmers to build their ability to identify viable market opportunities (CRS, 2014). The Zambia Economic Resilience for Improved Food Security (ZERS) project, branded as "MAWA" (November 2012 to November 2017), is a CRS project aiming to "build household assets, improves nutritional practices, and increases economic opportunities for very poor households through an integrated approach linking vulnerable households to productive agricultural value chains and investing in community, district, and provincial health systems" (Tucker et al., 2014).

Eastern Province Farmers work with farmers in the Chipata and Katete districts of the Eastern Province, helping them organize in self-selected groups and form registered Farmers Associations or Cooperatives.

Gorta-Self Help Africa is partnered with USAID, focusing on sustainable agriculture and nutrition, with current projects that cover food and nutrition security; research into and production of improved varieties of seeds; rural enterprise development; savings and credit; income generation; watershed management; sustainable agriculture and environmental rehabilitation. The Zambia program works mainly through farmer commodity producer groups, seed producer groups, research stations, local NGOs, civil society organizations and local government to reach smallholder farmers ("Our Work in Zambia," n.d. para 1).

PROFIT+ -Production, Finance, and Technology

The USAID-funded PROFIT+ project (June 2012 to May 2017) is a core activity of President Obama's FTF global hunger and food security initiative in Zambia (USAID, 2014). The project targets smallholder farmers and agro-enterprises to increase agricultural productivity and facilitate market access and private

sector investment in target value chains. PROFIT+ aims to link input supply enhancement with output markets and aid in the development of more inclusive value chains (Tucker et al., 2014). PROFIT+ works in four districts in the Eastern Province, and also in peri-urban Lusaka (Tucker et al., 2014). The project's overall objectives include improving smallholder productivity; increasing access to markets and trade; boosting private sector investment in agriculture. The geographic focus of PROFIT+ lies in the Eastern Province where the typical smallholder farms less than three hectares of land (Tucker et al., 2014).

Total Land Care and Plan International Zambia are NGOs working in Zambia. Total Land Care has projects located in the Eastern Province of Zambia, which focus on improving rural livelihoods with emphasis on reforestation, agroforestry, soil and water conservation, sustainable farming practices, crop diversification, low-cost irrigation, wood stoves, and safe drinking water and eco-sanitation. Plan International Zambia also helps communities, including youth, to gain "life skills in agriculture" by establishing savings and loan schemes, and providing business training, including processing and preservation (Tucker et al., 2014).

For-profit Companies

Cargill-Zambia manages a large cotton out-grower scheme in Eastern Province. Cargill works with approximately 60,000 cotton small-holder cotton producers, covering every district in the Eastern Province (although not confined to this region). Farmer outreach/extension efforts are based at 161 Farmer Service Centers that also serve as buying and payment points (Tucker et al., 2014). Cargill's extension program is organized around "Cotton Schools" and focused on just five key management practices:

- early/proper land preparation using minimum tillage/conservation agriculture approaches
- early planting
- appropriate plant populations
- timely and correct weeding
- integrated pest management

There are 1321 Cotton Schools in Eastern Province, and about 800 Cargill Women's Clubs registered in Eastern Province (Tucker et al., 2014). Cargill has a very visible presence in Eastern Province. The company currently employs 500 full time, long term employees in its cotton and small-scale origination network based in the Eastern Province and office in Chipata, and up to 1200 people in peak ginning season (Tucker et al., 2014). The Lusaka office functions as the commercial trading base for Zambia and has about 15 full time employees. Cargill is self-describes as "a reliable partner to NGOs and other stakeholders engaged in efforts to improve the livelihoods of smallholder farmers through extension services, marketing practices and supplying inputs" (Tucker et al., 2014).

Agri-input Dealers – Agricultural input dealers of all sizes and representing all product categories are engaged in extension and advisory service delivery (Tucker et al., 2014). The services provided by agricultural input dealers run the gamut from very well- organized with formal customer training and advising (often backed by the larger companies whose products the dealers represent) to the ad hoc, and often lower quality services provided by local merchants with limited agricultural knowledge and experience (Tucker et al., 2014). However, for farmers with limited access to public extension officers, agri-dealers are often the primary point of contact for supplies, and for information and technical advice (Tucker et al., 2014). According to the 2014 MEAS report by Tucker et al., "Agri-input dealers with good

technical agricultural knowledge can make an important contribution to the overall EAS system" (Tucker et al., 2014).

Farmers' Organizations

Central Growers Association (CGA):

The Central Growers Association's mission is *"to become the largest small scale farmer owned and managed agribusiness in Central Province operating well-managed and economically viable out-grower schemes for cash crops so as to improve their farming incomes among its members thereby contributing to their poverty reduction"* (Tucker et al., 2014). Although not operating in the Eastern Province, CGA's services to members include extension and training, credit, market facilitation and market sourcing/price negotiation for member-produced tobacco and paprika. Current membership was reported to be 1212 (73% male, 27% female) (Tucker et al., 2014).

Eastern Province Farmers' Cooperative (EPFC)

is a community business that provides farming services to smallholder farmers. EPFC works with about 6300 farmers, 500 of whom are groundnut seed producers, in Chipata and Katete districts of Eastern Province. The overall focus is to develop the value chain for groundnut producers by linking thousands of business-oriented smallholder farmers to "large and valuable" markets (Tucker et al., 2014). Using short value chains, EPFC strives for "enhanced member income to support smallholder households, and to sustain and grow investments in farm productivity and efficiency" (Tucker et al., 2014). Extension services include beginning of season training for seed growers, post-planting training on field monitoring and inspection and post-harvest training on grading, handling and storage of seed, and all producers get aflatoxin training Tucker et al., 2014).

Zambia National Farmers Union (ZNFU)

is a national membership-based organization that represents the agriculture industry with country-wide coverage, representing small and large scale farmers, and agribusinesses (Tucker et al., 2014). The union's mission is stated as: "Promoting and safeguarding the interest of members as individual farmers, corporations/companies, purveyors, and other organization involved in the business of agriculture in order to achieve sustainable agriculture, economic and social development." ZNFU's membership currently includes approximately 600,000 smallholder farmers and 700 large scale farmers. Although small farmers can access information through district offices, the digital technology gap disadvantages them as compared to the large farm ZNFU members. "Field Days" are often hosted by large scale farmers, but the learning activities take into account the interests of smallholder farmers who comprise the majority of attendees (Tucker et al., 2014).

Conclusions

Agriculture plays a major role in Zambia's economy, and the vast majority of Zambians rely on it for their livelihoods and sustenance. It is a key driver of economic growth and poverty reduction, and the country is endowed with an abundance of fertile land, water resources, and a climate that is generally favorable for agricultural production (Sitko et al., 2011). However, despite these attributes, agricultural growth in Zambia remains stagnant, poverty rates in rural areas remain persistently high at 80%, and incidences of stunting, malnutrition, and wasting continue to disproportionately affect rural Zambians (Sitko et al., 2011). Increasing the incomes and agricultural production of both men and women smallholder farmers is not enough to achieve adequate nutrition. Farmers and their families need access to nutritious foods and to the knowledge to make informed choices about diverse diets and other nutrition-enhancing behaviors. Advancing extension resources beyond agricultural development to the broader rural development agenda would benefit health, nutrition, education and the status of women and girls (Tucker, et al., 2014).

Integrating the objectives of gender equity and improved nutrition within agricultural extension services will contribute to achieving these goals.

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Annex 1: Zambia National Agriculture Policy (NAP) and National Agricultural Investment Plan (NAIP) Extension Objectives

National Agriculture Investment Plan (NAIP) 2014-2018

Under the framework Comprehensive Africa Agriculture Development Programme (CAADP), Zambia's Ministry of Agriculture and Livestock (MAL) developed the National Agriculture Investment Plan (NAIP) (2014-2018) in 2013, suggesting that the GRZ intends to support further strengthening of extension and advisory services and allocate significant resources to carry it out over the next few years (Tucker, et al., 2014). NAIP (2014-2018) places emphasis on pro-poor agricultural led economic development (NAIS, 2013) and seeks "*to identify and prioritize key investment and policy changes in Zambia that are critical to enhancing the desired agricultural productivity growth*" (Tucker et al., 2014). NAIP is organized around four major programs: 1) sustainable natural resource management; 2) agricultural production and productivity improvement 3) market access and services development; and 4) food and nutrition security and disaster risk management. GRZ seeks to incorporate the private for-profit sector in its vision for agricultural investment and development, as described in the NAIP a "private sector led agricultural growth with government providing the necessary facilitatory enabling environment" (NAIP, 2013).

The overall objective of the NAIP is "to facilitate and support the development of a sustainable, dynamic, diversified and a competitive agricultural sector that assures food security at household and national levels and maximizes the sector's contribution to GDP." The following goals are monitored in tracking progress to toward achievement of a productive agricultural sector and nationwide food security (Tucker et al., 2014):

- reduction of rural poverty from 77% to 50%,
- increase in agricultural exports as a percentage of non-traditional exports from 41% in 2011 to 55%,
- reduction in chronic malnutrition of children under five from 45% to 30%,
- reduce soil erosion per hectare from 20 tons to 10 tons, and
- increase cereal production from the 3.2 million tons to 6.0 million tons per year.

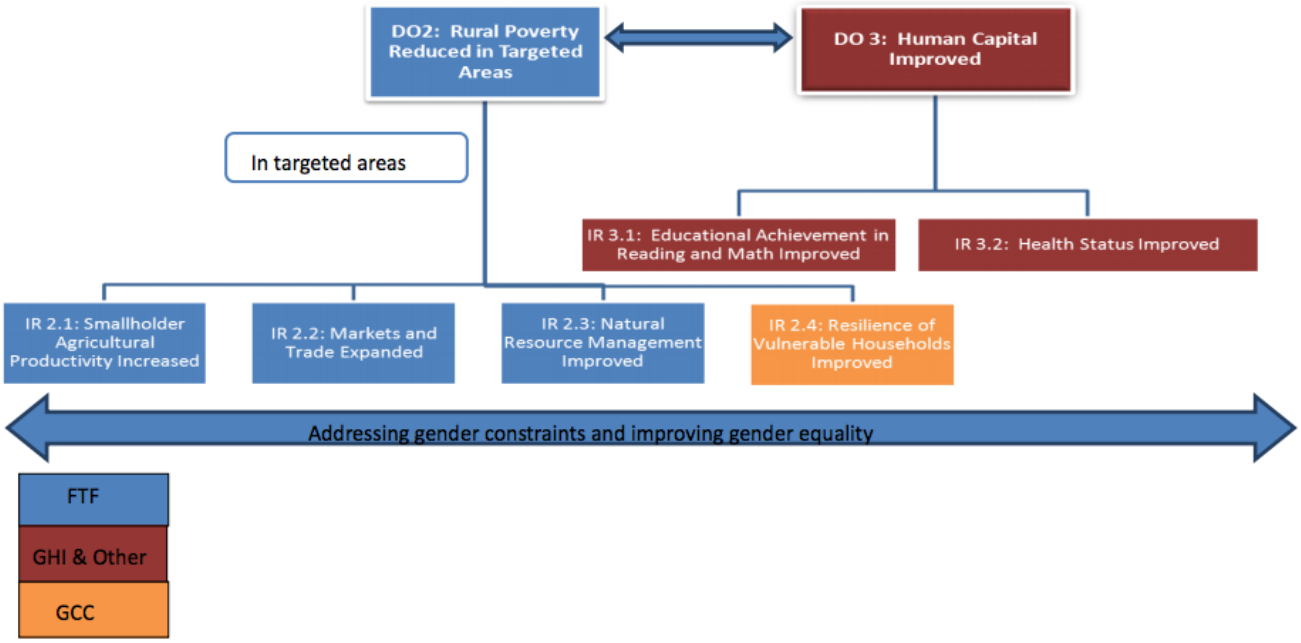
The Food and Nutrition Security Component of the NAIP states that "key knowledge support systems" need to be strengthened and developed to enable Zambia's Ministry of Agriculture (MoA) and the agriculture sector to provide the famers and practitioners with the products and services they require (NAIP). This targets four sub-components: (i) Strengthen Seed Systems; (ii) Strengthen Research Systems; (iii) Strengthen Extension Systems, and; (iv) Strengthen Agricultural Training and Education Systems (Sitko et al., 2011). Challenges involved in implementation include the integration of the many identified agricultural sector priorities with one another, and with the priorities and strategies outlined in the National Food and Nutrition Strategic Plan (NFNSP) (Tucker et al., 2014). A significant challenge also lay in synergizing MAL's focus on smallholders with commercial potential with the goal of reducing persistent and high levels of poverty and food insecurity, especially in areas with comparatively poorer resources and less market access (Tucker et al., 2014). The NAIP indicates recognition the heterogeneity across Zambian agro-ecological zones and across rural households, but it does not contain a clearly defined strategy for encouraging investment in regions of the country where it is most needed or in value chains that address the disadvantages of women and the poor (Tucker et al., 2014).

The National Agriculture Investment Plan (NAIP) key strategies to strengthen extension services are:

1) The engagement of greater numbers of human capacity
2) Rehabilitation and construction of farmer training centers, institutes and staff houses
3) Procurement of motorbikes and other equipment
4) Staff skills development, with 3,500 extension staff targeted
5) Re-visiting the current extension system, which is divided between crops, livestock and fisheries, in order to move towards an integrated, unified and sector wide extension system
6) The enactment and implementation of appropriate policy interventions such as tax rebates.
7) The strengthening of the Research System and broadening its financing.

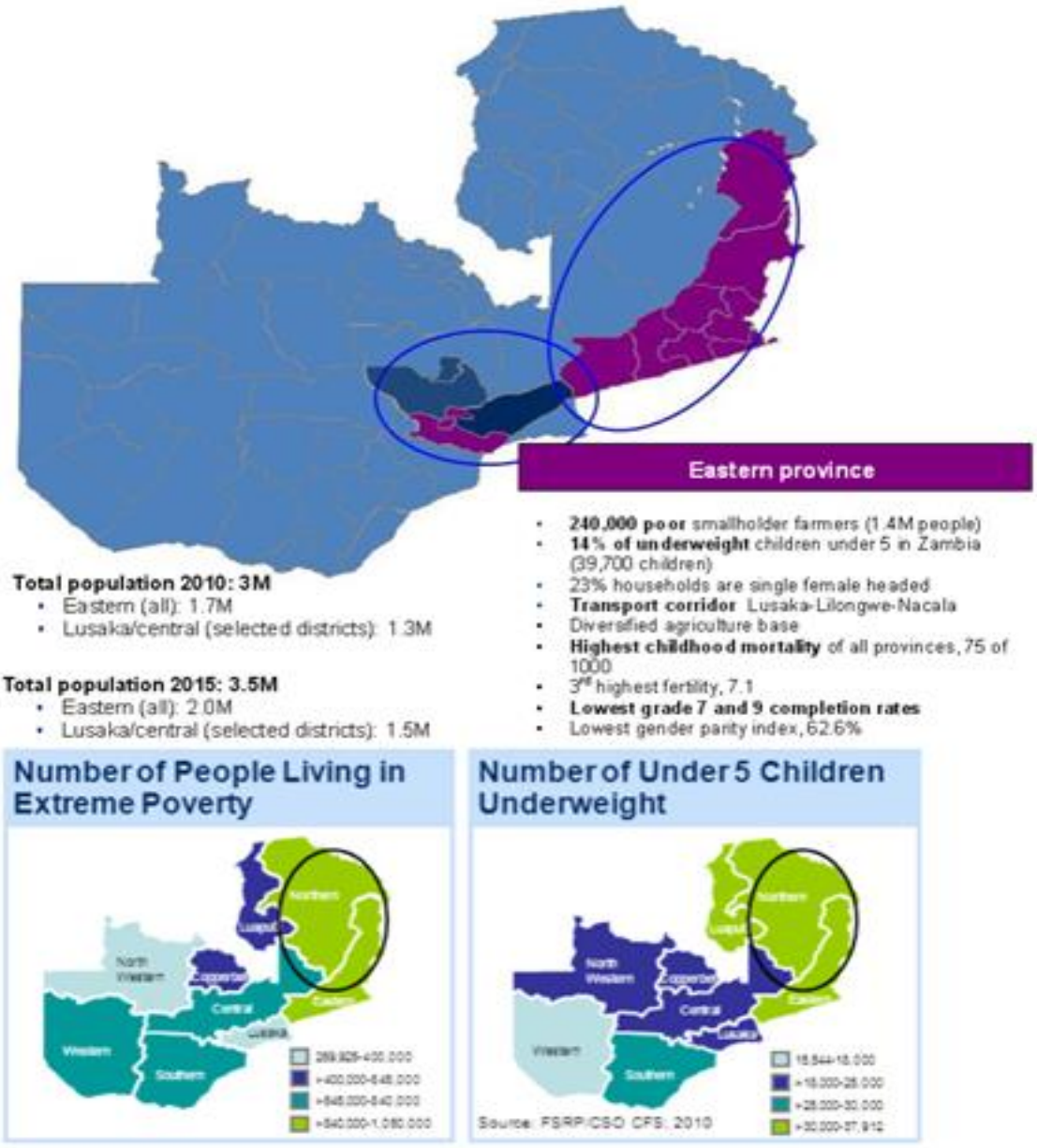
Annex II: Zambia FTF Results Framework

ANNEX A. ZAMBIA COUNTRY DEVELOPMENT COOPERATION STRATEGY (CDCS) RESULTS FRAMEWORK



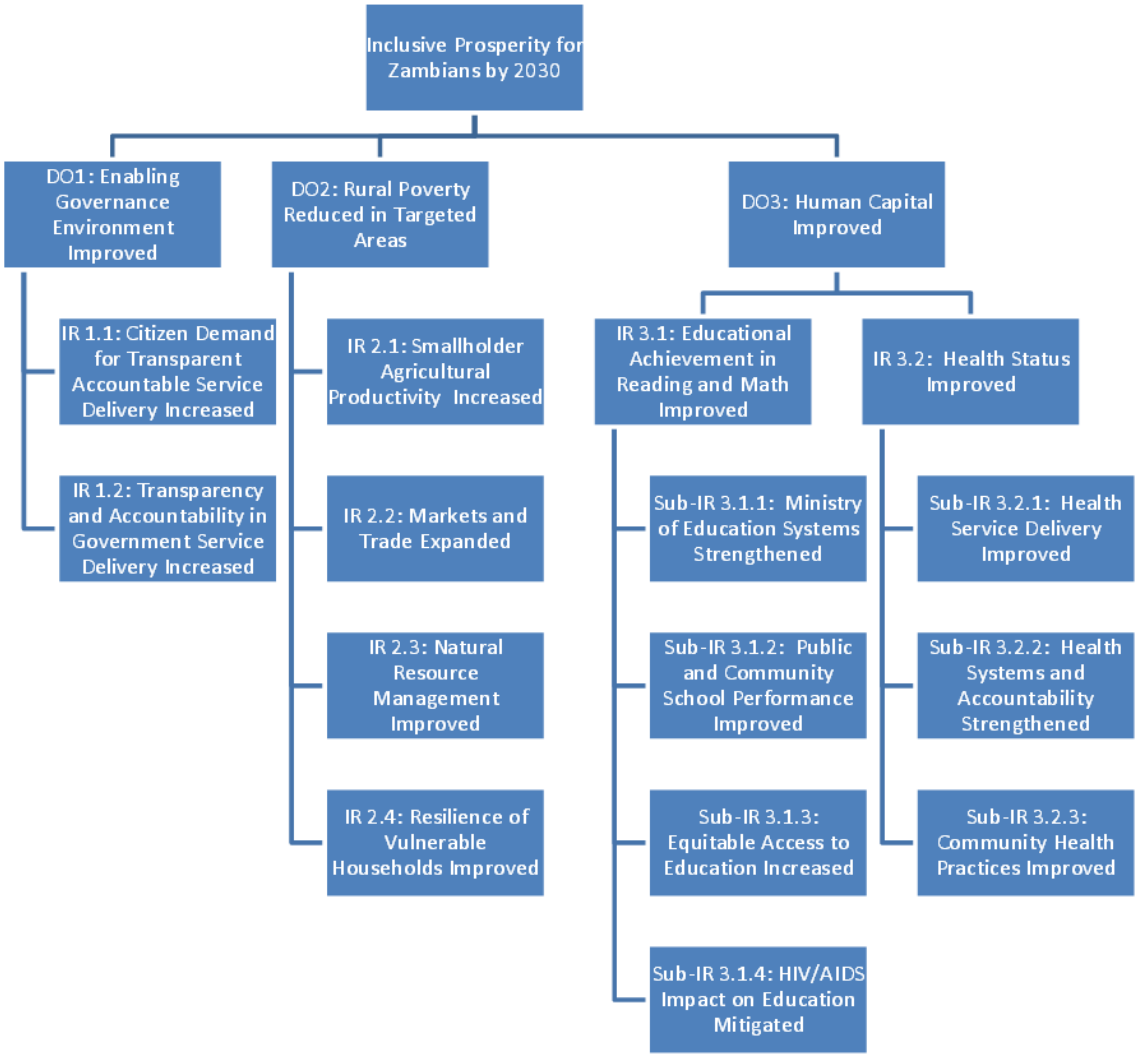
Source: FTF Multi-Year Strategy for Zambia, 2011; p. 38.

Annex III: Zambia's Country Development Cooperation Strategy (CDCS) (2011-2015) Focus Areas



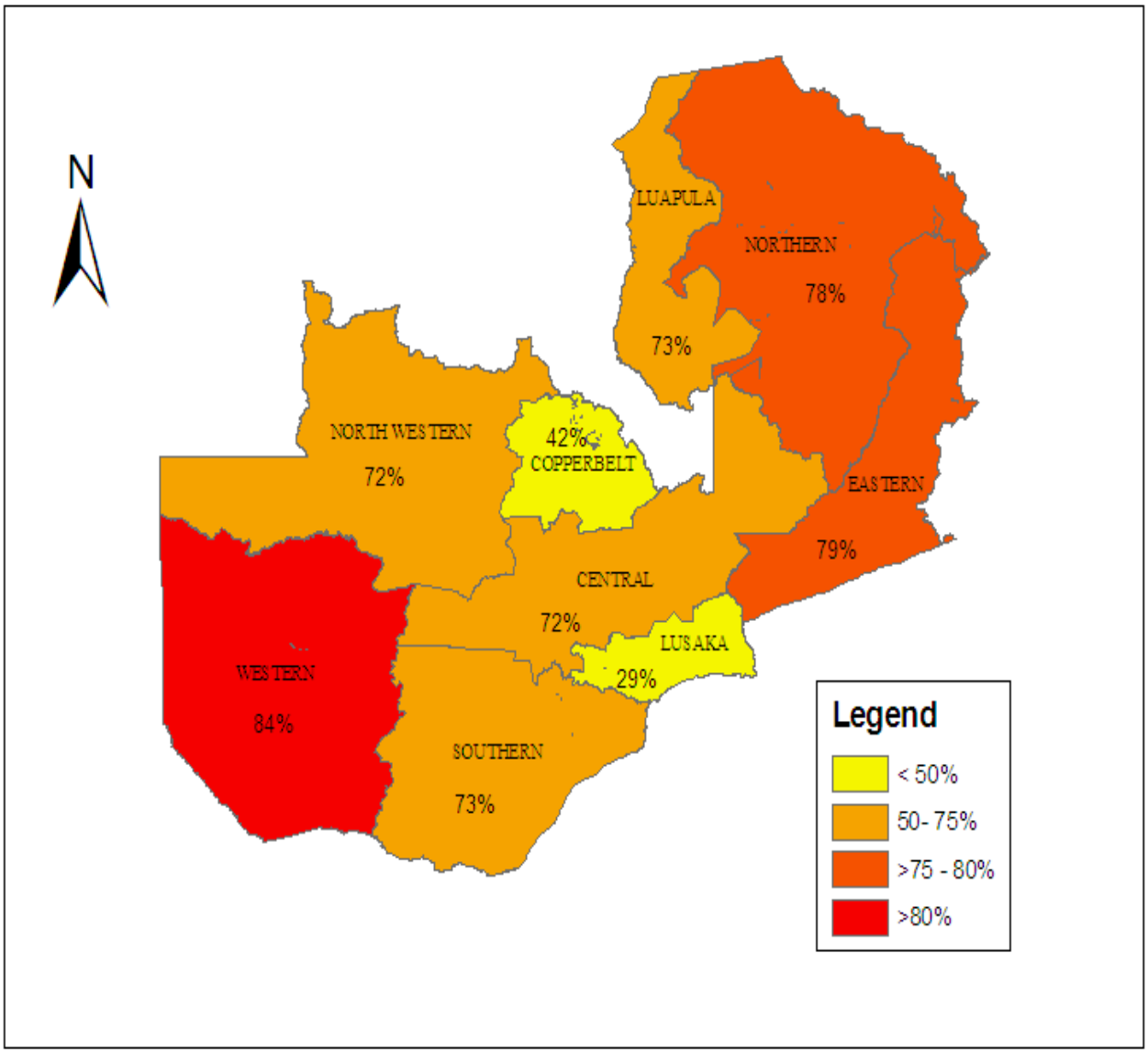
Source: USAID/Zambia Country Development Cooperation Strategy (CDCS) 2011-2015.

Annex IV: The USAID/Zambia CDCS Results Framework



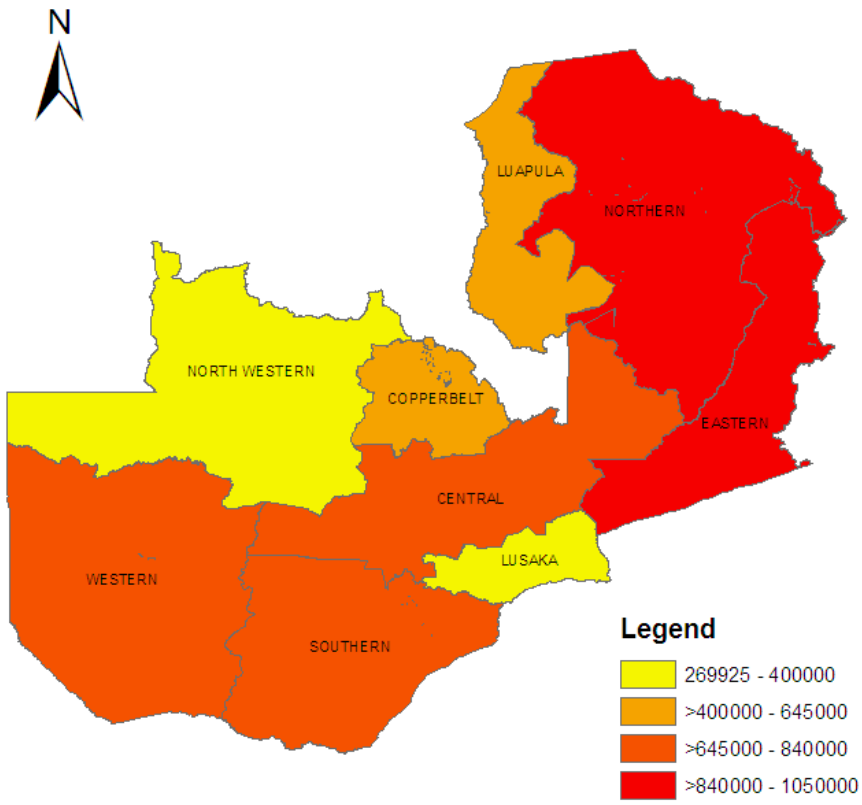
Annex V: Maps

Map 1. Incidence of Poverty in Zambia.



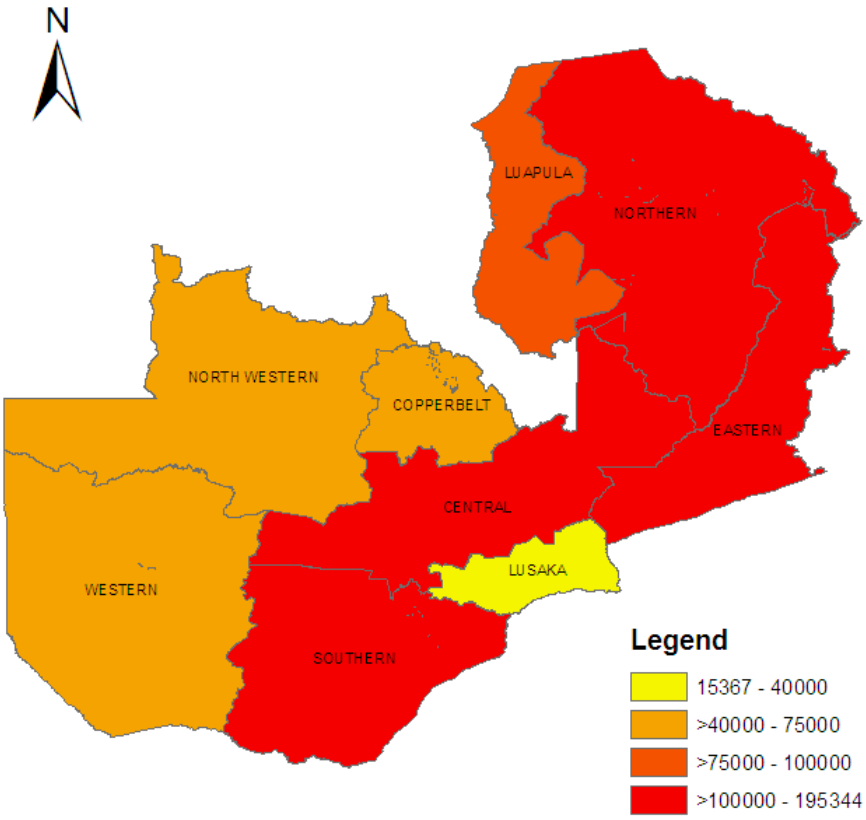
Source: Sitko et al. (2011).

Map 2. Numbers of People Living in Extreme Poverty by Province.



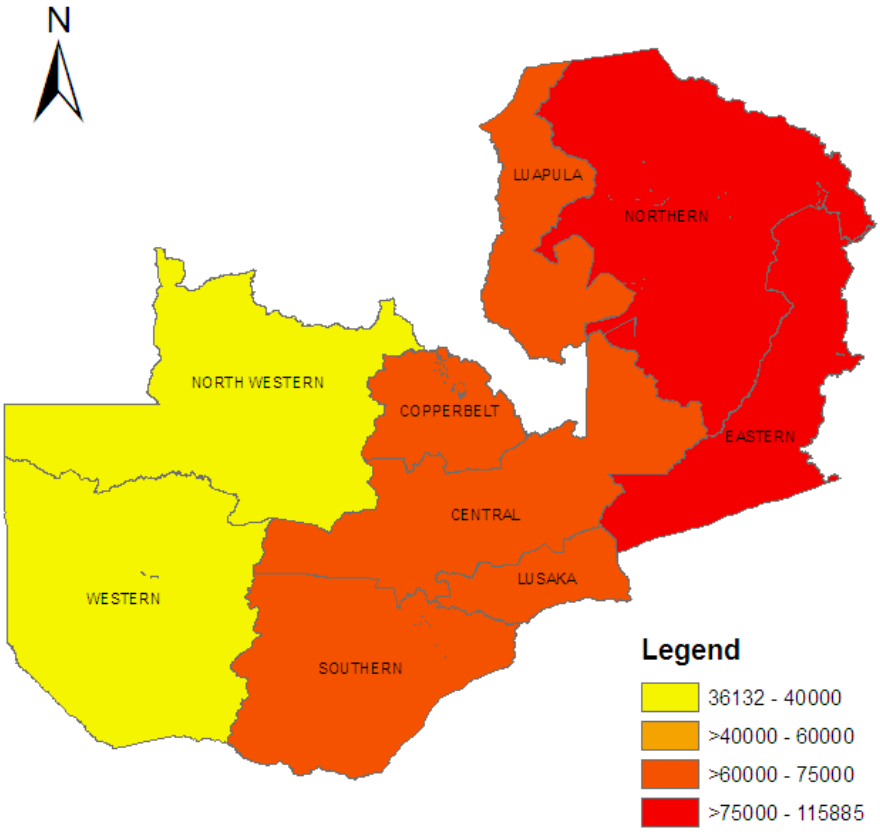
Source: Sitko et al. (2011).

Map 3. Number of Households with One Hectare of Land or Less



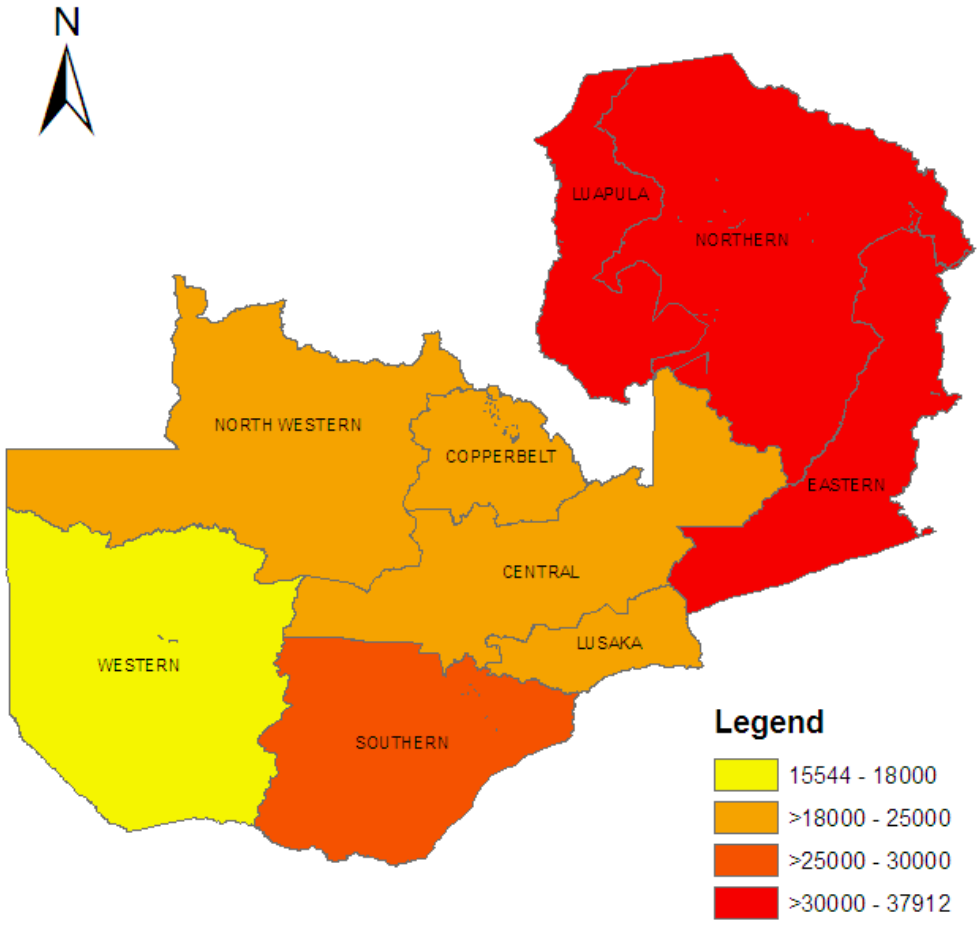
Source: Sitko et al. (2011).

Map 4. Number of Under 5 Children Exhibiting Signs of Growth Stunting by Province



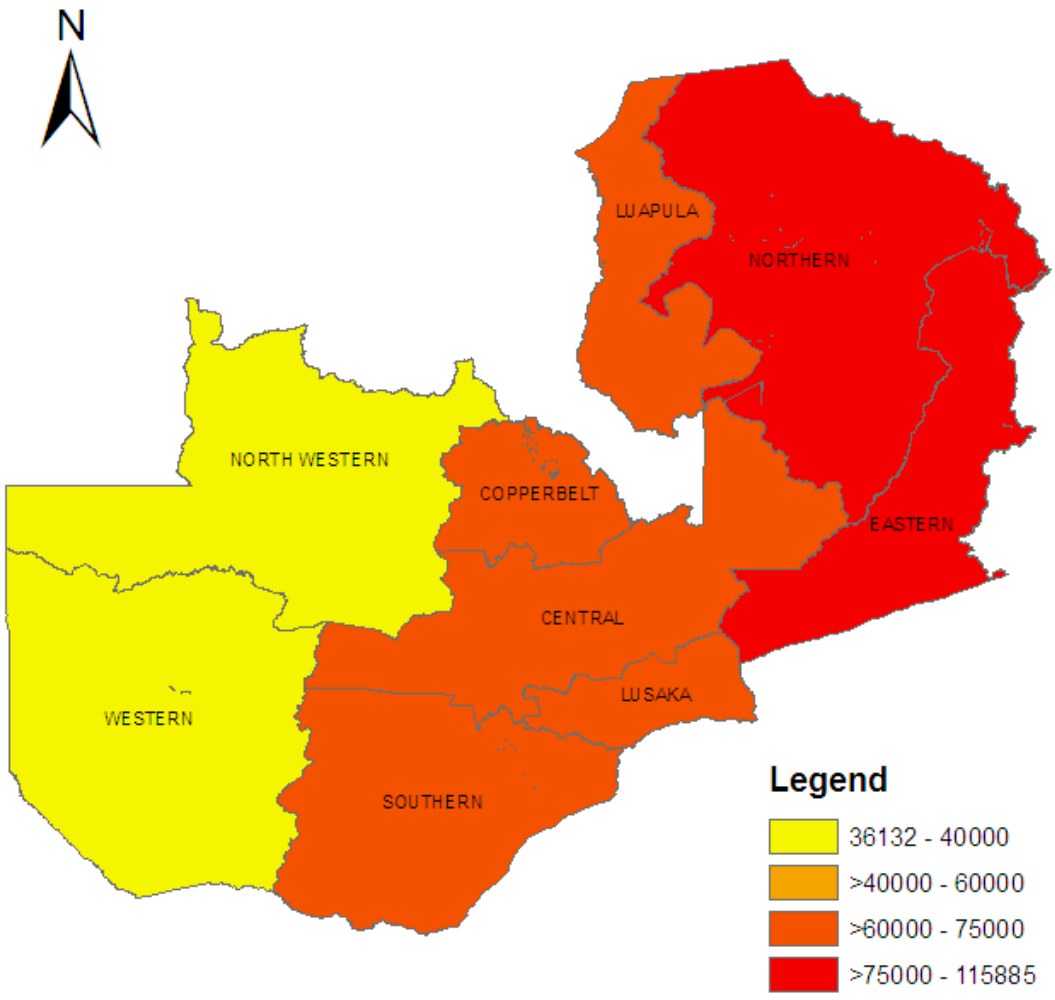
Source: Sitko et al. (2011).

Map 5. Number of Underweight Children by Province



Source: Sitko et al. (2011).

Map 6. Number of Under 5 Children Exhibiting Signs of Growth Stunting by Province



Source: Sitko et al. (2011).